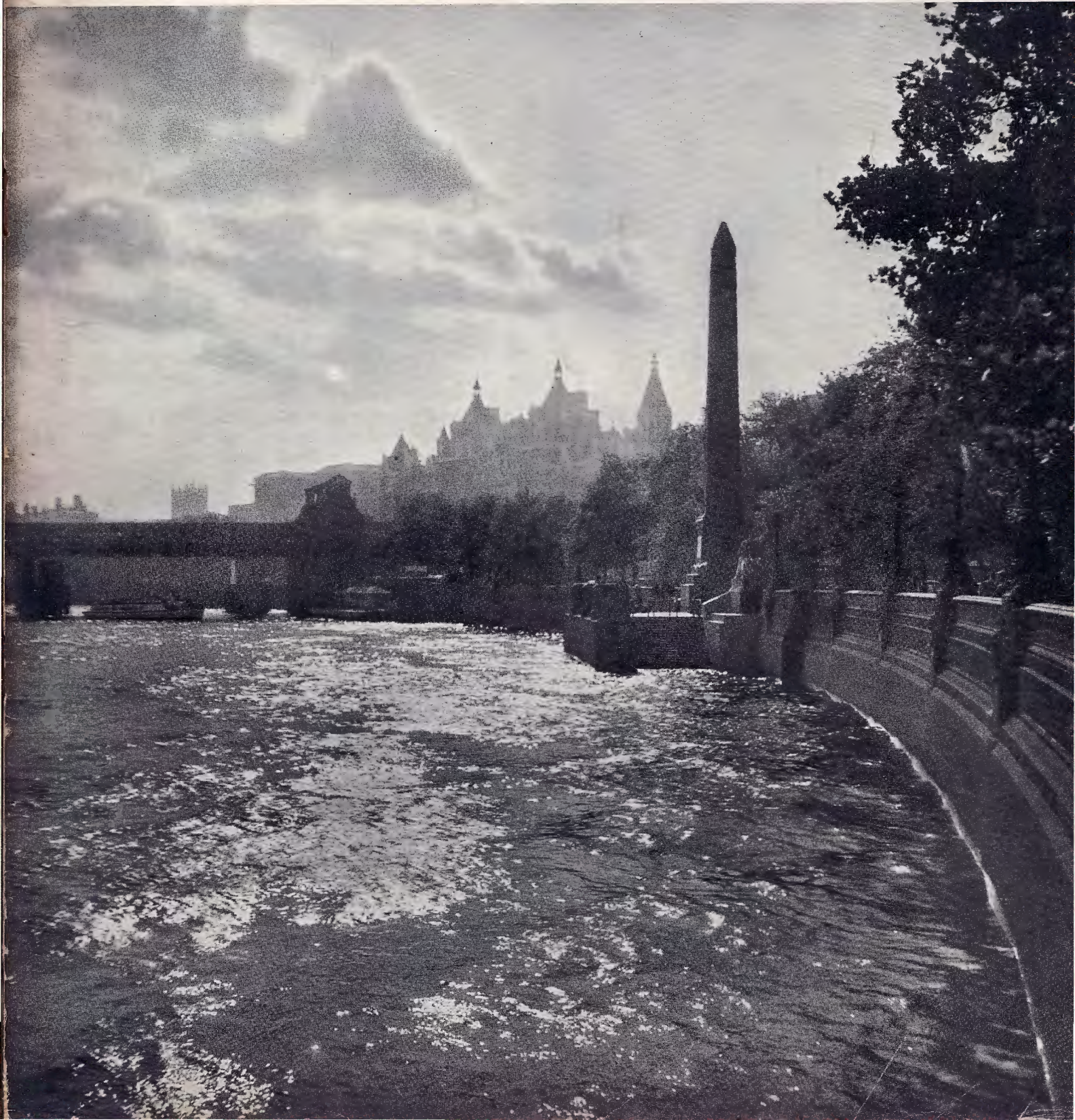




MAGAZINE

PRICE TWOPENCE

MAY 1951



THE I.C.I. MAGAZINE

VOLUME 29

NUMBER 175

MAY 1951

The *I.C.I. Magazine* is published for the interest of all who work in I.C.I., and its contents are contributed largely by people in I.C.I. It is edited by Richard Keane and printed at The Kynoch Press, Birmingham, and is published every month by Imperial Chemical Industries Limited, 26 Dover Street, London, W.1. Telephone: REGent 5067-8. The editor is glad to consider articles for publication, and payment will be made for those accepted.

CONTENTS

I.C.P. — its ninth birthday	130
Information Notes No. 62	135
A Visit to the Kruger National Park, by <i>W. M. Inman</i>	140
The Sport of Cycling, by <i>Harold Crye</i>	145
Works Council Elections	148
I.C.I. News	150
The Old Vic, by <i>George Devine</i>	157

Front Cover: Vast crowds of visitors are now converging on the Thames for the Festival of Britain. This photograph by A. Walker of Billingham was taken from the Embankment, near Cleopatra's Needle.

OUR CONTRIBUTORS

HAROLD CRYE writes on cycling with all the authority of one who for seven years was president of the Manchester Wheelers' Club and six times its road champion. He is also well known throughout the country as an official on the Road Time Trials Council. He joined the Company in 1936 and is a maintenance engineer in the Blackley Works of Dyestuffs Division.

*GEORGE DEVINE is one of the Old Vic's team of producers and also a director. His association with them dates from pre-war years; in fact *The Tempest*, which was the last Old Vic play before bombing closed the theatre in 1940, was his production. His most notable production this year is Ben Jonson's *Bartholomew Fair*. He is married to Sophia Harris, the stage designer, better known together with her sisters as "Motley."*

W. M. INMAN, chairman of Alkali Division, took the opportunity of a journey to South Africa last year to revisit the Kruger National Park, the 8000 square mile game reserve in South Africa. Mr. Inman has had a varied career within the Company. The more important posts which he has held include Commercial Director at Billingham (1935-9), Controller of Purchases (1939-43), and Sales Controller (1943-5).

I.C.P.

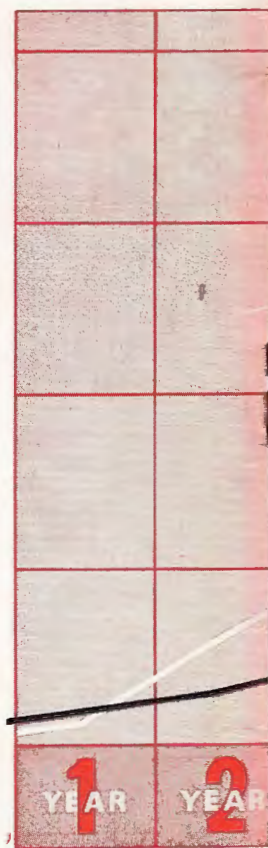
By J. A. Cochrane (Sales Ma

On the first of last month — April Fools' Day year of existence. The Division has much to be world-famous drugs of immense benefit to human only one — but also its sales have triumphed over

FOR nine years now, dating from the first of last month, Pharmaceuticals Division has held sway as the youngest and perhaps the most precocious member of the I.C.I. family. Its parents have guarded it carefully, nurtured it wisely and have been at pains to ensure that, while it should be generously provided for, it should not be recklessly indulged. Under this care its growth, helped by external and unforeseeable influences, has been much more rapid than was felt possible when the Division was planned ten years ago.

Today the Division sells twelve times what it sold in 1942 to many different markets, and is responsible for about 20% of all British drug exports. This is a not inconsiderable achievement when it is remembered that with the end of the war in 1946 the bulk of the Division's business ended too. Most of it had been done with the Government, who at once cut their peacetime orders to one-fifth of the war-time figure.

The story of Pharmaceuticals Division dates back to before the war, when in 1936 the Board of I.C.I., realising the importance of the collaboration of the organic chemist and the biologist, cast their bread upon the waters and voted money for research for a period of five years, with the faith that new and better drugs would be born. Later, I.C.I. was asked by the Government to undertake the imitative manufacture of essential drugs up to that time obtainable almost only from Germany. Most important of these were the antimalarial drugs mepacrine and pamaquin. To make these in the quantities required Dyestuffs Division had to concentrate on the essential work of process development. Nevertheless the earlier



SALES ARE THE INDEX
switch-over

its ninth birthday

nager, Pharmaceuticals Division)

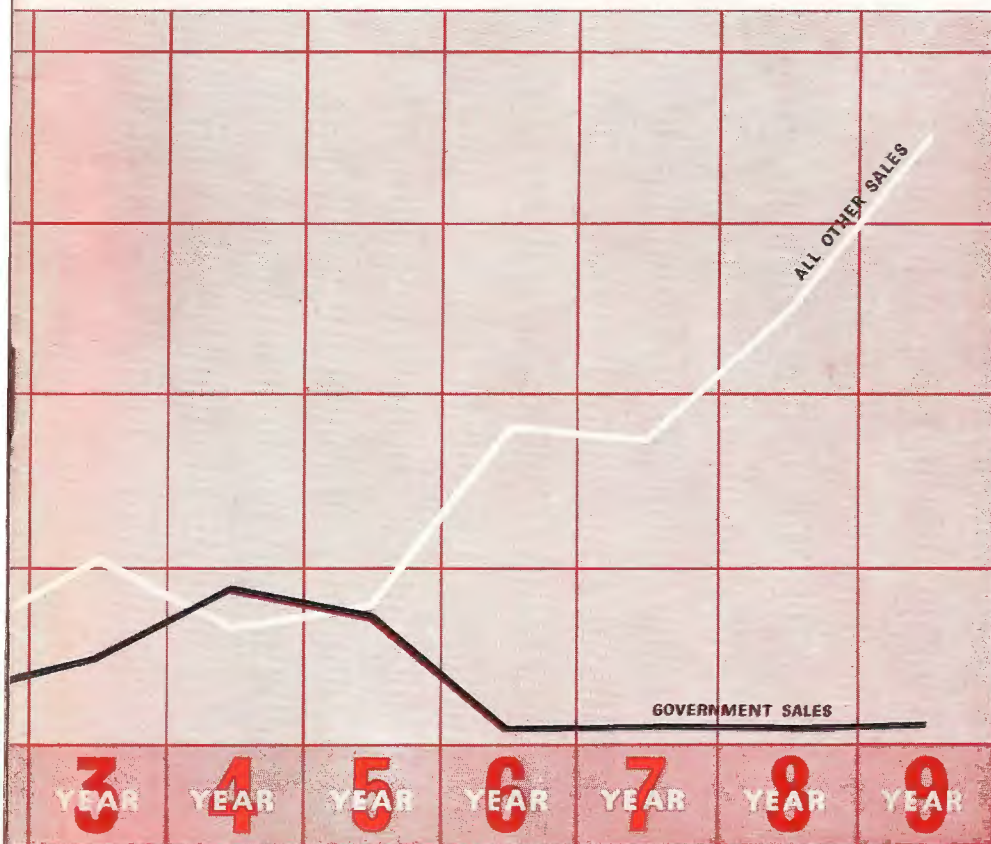
— Pharmaceuticals Division completed its ninth proud of. Not only has its research produced nity — such as 'Paludrine' for malaria to mention er difficulties and shown phenomenal expansion,

plans of I.C.I. for pioneering research in drugs were never neglected, even under the most stringent wartime conditions.

By 1942 the manufacture of drugs by Dyestuffs Division had reached a point where it became advisable for the company to have its own marketing organisation. The existing distributing arrangements were terminated and Imperial Chemical (Pharmaceuticals) Ltd. was born on April Fools' day,



RESEARCH IS VITAL to success. Here mosquitoes are being dissected in the laboratory under the microscope



of health and prosperity. This graph illustrates how the Division has successfully overcome the from bulk governmental sales to selling individual products the world over.

1942. In the eyes of the world I.C.(P) carries the credit and responsibility for the manufacture and the research activity of I.C.I. as a whole in this field of chemotherapy. At the start Pharmaceuticals Division possessed only a handful of chemists and biologists, with still fewer engaged on the commercial side. All of them worked at Blackley, Manchester, the headquarters of Dyestuffs Division. But whereas the research workers have remained at Blackley (with additional laboratories at Wilmslow in Cheshire), the commercial and service departments moved first into the centre of Manchester, then to Alderley Edge, and are now at Fulshaw Hall, Wilmslow.

From the very first Pharmaceuticals Division has thus lived in temporary accommodation. Much scientific work has been done in huts which were never designed for that purpose, and the commercial departments have moved from one ill-heated baronial hall to another. We claim that the child's toughness has kept pace with its vigour.

It was indeed fortunate for the nation that I.C.I. had been asked to manufacture antimalarial drugs. With the loss of Java, Britain was cut off from the

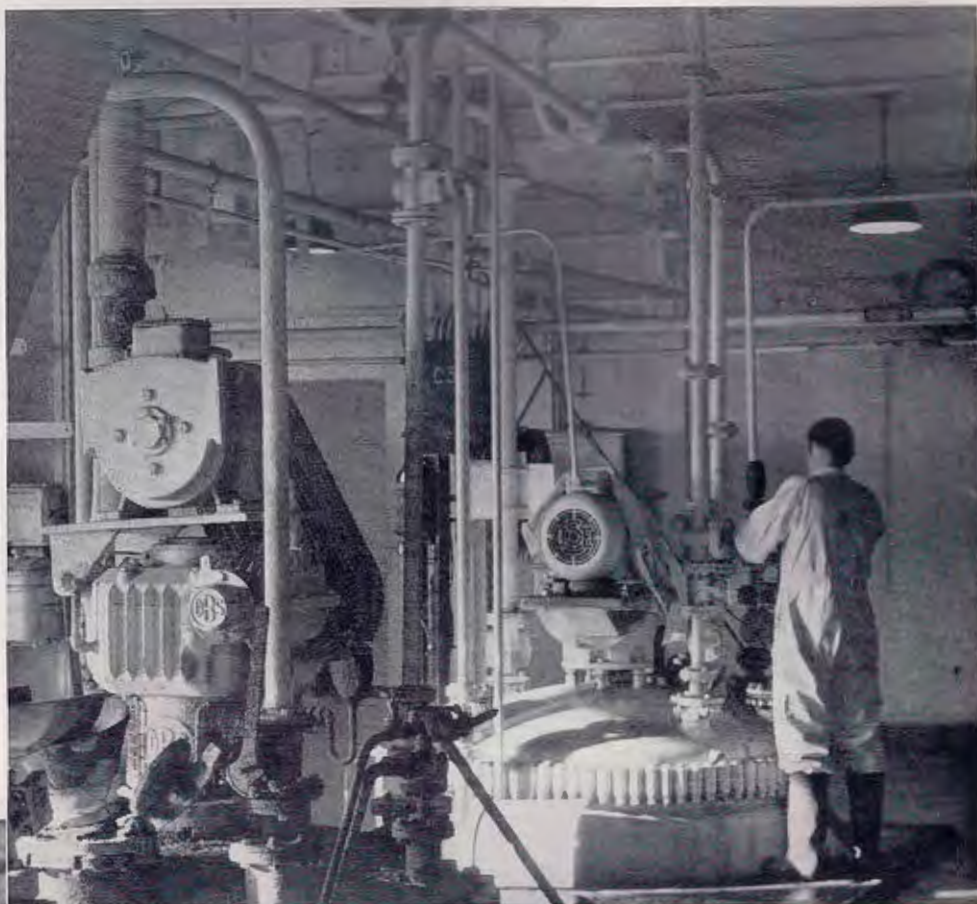
last source of quinine—the then recognised antimalarial drug—and therefore the manufacture at home of synthetic substitutes for quinine became vital for the successful prosecution of the war in tropical and sub-tropical countries.

Because of its vast skill in organic chemistry, I.C.I. was the first to make mepacrine and pamaquin; and remains, until this day, the largest maker. When one recalls that every serviceman exposed to malaria was given 280 mepacrine tablets each year, it will be realised how enormous the business became. The power of malaria is such that, in Burma in 1943, there were 120 malarial casualties to every battle casualty.

And so mepacrine and pamaquin production multiplied. I remember how in the course of one exciting three weeks, two service contracts were obtained worth more than £600,000. Possibly these were the largest contracts for medical supplies ever placed up to that time.

Then came the end of the war. Early in 1946 all our Service and Government contracts either ran

out or were terminated. Eighty per cent. of the business had gone beyond recall. We were faced with a **gigantic task**—that of finding customers for millions of pounds' worth of **medical supplies**, the bulk of which were antimalarial drugs. In the latter years of the war we had been making plans on paper for



A STAGE IN THE PRODUCTION of a new drug — the distillation of an intermediate product



CARE AND CLEANLINESS are necessary in preparing drugs, and every precaution is taken to safeguard the health of workers

just this eventuality. Immediately after the war, not without many a desperate plunge into the unknown, we endeavoured to put theory into practice.

There were no longer any buyers with bottomless purses—no large contracts to be secured. Professional men had to be convinced individually of the merits of our drugs. We set out on a programme of selling tiny quantities of about thirty different products to a multitude of people. How far we were successful can be gauged from the fact that annual turnover dropped no more than 15% below the wartime best. Last year our sales were nearly three times as great as they were at any time during the war—and this in a market where there has been no substantial change in drug prices since 1938.



RELIEF FROM PAIN in childbirth is given by 'Trilene,' which is becoming established as most effective in this field

To sell our drugs abroad we have used, wherever possible, the I.C.I. associated companies, who have mostly set up special pharmaceutical departments. Our companies abroad quickly realised that selling drugs was very different from selling heavy chemicals. In many countries, however, there were no associate companies to turn to, and distributors had to be selected.



ON THE FARM 'Phenovis' has reduced to a minimum losses in sheep from worm infestation

The many contenders for favour had to be carefully considered. This involved much travelling. By a system of trial and error we have now learned what the diverse legal, poison, dangerous drugs and registration regulations are in the many markets in which we trade. But these lessons have not always been easily or quickly grasped.

Today every country in the world, with the exception of Japan, has been supplied at some time or other with our products. We are doing regular business in 117 different markets. Because of the nature of this business, which involves the supply of products in very small units, our global marketing organisation is undoubtedly more intricate and more widespread than that of any other I.C.I. Division. More than 70% of our total business is done abroad. In fact a healthy export business is essential to carry the high expense of research on the scale of I.C.(P).

The drug business is a highly competitive one. Before 1938 the Germans were predominant, followed by the French and Swiss. But the war gave a great impetus to American manufacturers, and they have had the lion's share of the business for the last five years.

Now, however, the devaluation of the pound has given British manufacturers a great opportunity, which the larger firms have seized upon with alacrity. And the stage is being reached where business may be frustrated by the difficulty of securing essential packaging components and certain basic chemicals.

Perhaps the greatest discovery of recent times has been penicillin. It was purely a British discovery, and under normal conditions would have been exploited in this country. A great deal of the penicillin used by Professor Florey at Oxford in establishing the clinical value of penicillin was of I.C.I. manufacture. British drug makers, however, were unfortunately

IN AFRICA are vast potentialities for new drugs. Here cattle are being injected with 'Antrycide.'





IN THE SERVICES during the last war mepacrine played a great part in combating malaria at a time when Japanese invasion had cut off the allies from all sources of quinine. Every man exposed to malaria was dosed with mepacrine at the rate of 280 tablets a year.

not in a position during or indeed immediately after the war to develop penicillin on a big scale. The opportunity was therefore seized by the Americans; and the value of their exports of antibiotic substances, such as penicillin and streptomycin, has been considerable. Perhaps some American writers have exaggerated when they have stated that the drug industry is expected to become the biggest individual industry in the United States. But certainly it is destined to grow still more.

The early activities of Pharmaceuticals Division were restricted to the manufacture of penicillin by surface culture methods. This was largely because the imperative demands of the Services for penicillin by the earliest possible date left no opportunity for the trial of other techniques. On the other hand, the Americans developed with almost clockwork precision a process for making penicillin much more successfully and economically by the use of what has come to be called the "deep culture technique." We were at a severe disadvantage in this respect. Some of the leeway has now been made up by our being the first in this country to make and sell the pure crystalline penicillin (now the staple commodity), potassium penicillin (penicillin in its most stable form), and an oily suspension of procaine penicillin, which has a more lasting effect in the body than any other penicillin yet available.

Pharmaceuticals Division is still one of the smaller contributors to the turnover and profitability of its parent organisation, but we do not expect to be always in that position. Moreover, the Division renders the Company a service of great potential value in the sphere of prestige and publicity. I.C.(P) is the shop window of I.C.I. I.C.(P) products are now used on at least 3,000,000,000 different occasions each year—or once a year per head of the population of the world. Doctor and patient alike take note of the drug that is successful and of the company that makes it.

In this article I have stressed the sales activities of the Division; and this is perhaps to do less than justice to that most essential and successful part of the Division's work—the research and development activities of the chemist, the biologist and the pharmacist. Without this no progress could ever have been made. They have entered a new field of chemotherapeutic research which led to the discovery and successful exploitation of 'Paludrine,' the most widely used antimalarial drug today; 'Sulphamezathine,' the all-purpose sulpha drug; and 'Antrycide,' the powerful weapon with which to combat the trypanosomiasis which has played so much havoc in the economy of Africa. These researches have made I.C.(P) known and respected in scientific circles throughout the world.

Information Notes

SHOULD BRITAIN PRODUCE SYNTHETIC RUBBER?

At the annual dinner of the Institution of the Rubber Industry last year Mr. Beharrel, the managing director of the Dunlop Company, asked British chemical manufacturers to give earnest consideration to undertaking the production of synthetic rubber in this country. Here Dr. W. J. S. Naunton of Dyestuffs Division outlines the development of the synthetic rubber industry in the United States and discusses some of the advantages which the synthetic product has over the natural one.

RUBBER has become one of the necessities of life in both peace and war. It forms an essential part of almost every machine of war, and while it may represent only an extremely small fraction of the cost of such machines, the effective life of that machine, be it bomber or torpedo, depends upon the proper functioning of its small rubber components. The success of an army no longer depends upon the marching capacity of its infantry but upon the quality of the rubber tyres which transport its troops, munitions and food.

Natural rubber is produced from the fluid called latex which exudes from cuts made in the bark of rubber trees, which can be grown only in the tropics. The production of natural rubber cannot be increased at short notice, since it is some years before the tree can be "tapped."

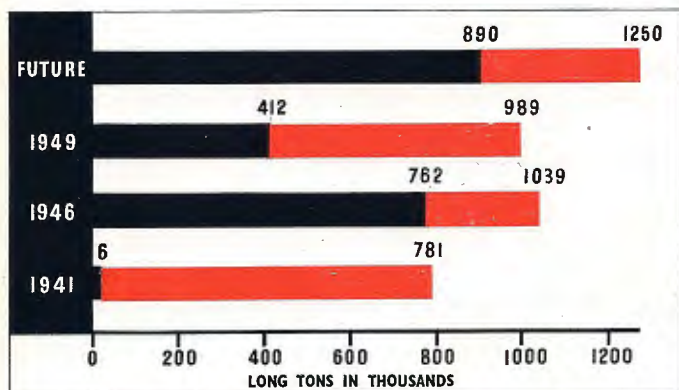
From about 1912 to the beginning of the second world war the increase in the production of raw rubber kept pace with the rapidly increasing demand for tyres for automobiles. But when Singapore was occupied by Japan our supplies of raw rubber from Malaya were completely cut off. True, we still received rubber from Ceylon and other small producing areas, but this represented only a small fraction of the Malayan and Indonesian output.

The Allies held urgent councils as to where the synthetic product could or should be produced. It was finally agreed that the United States was the only country which had the necessary resources in man-power, steel and raw materials (crude petroleum and coal) to undertake this colossal task. In an amazingly short time a general-purpose synthetic rubber

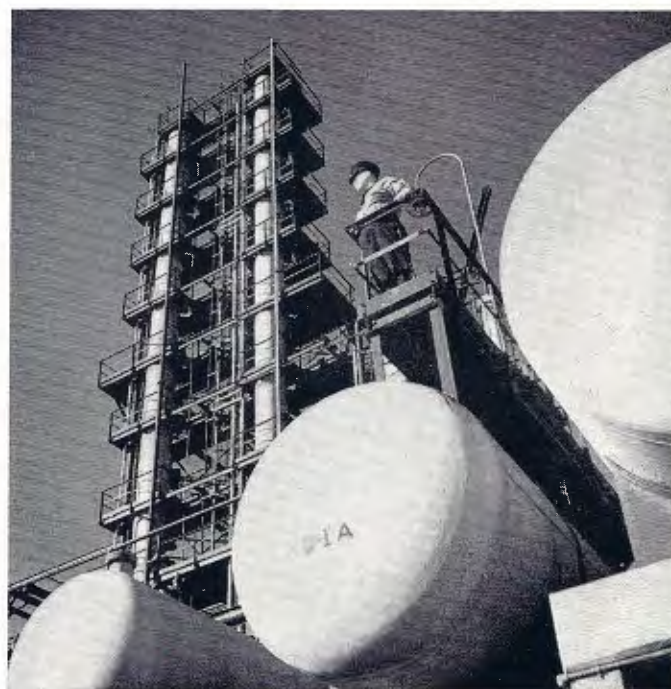
called GR/S (Government rubber/styrene) was produced, and by the end of the war its potential output was almost equal to that of the pre-war output of natural rubber. Many felt that keen competition, based largely on cost, would ensue between the natural and synthetic products, and with this in view the U.S. Government closed down most of its synthetic plants.

Soon after the war, however, it was beginning to be seen that the demand for rubber had increased to such an extent that the world's rubber industry might be able to absorb the outputs of both products. On top of this, the demand for rubber for munitions revived and (which made things worse) several governments decided to stockpile natural rubber as a precautionary measure.

Now, the price of rubber, like that of most commodities, is controlled by supply and demand. The result was the considerable rise in price which has been experienced during the last year or so. This increase in price was not due, as some



United States rubber consumption: synthetic rubber is shown in black, natural rubber in colour



Purifying towers are a feature of synthetic rubber plant. These towers extract from petroleum the most important ingredient for making butyl.

enemies of the plantation industry would like us to believe, to market manipulation such as withholding supplies, since the actual weight of rubber thrown on the market has been bigger than in former years. It was due solely to the inability of the producers to meet the increasing demand, even though the American rubber industry is using synthetic rubber wherever possible. The American Government have by now put back into operation most of their stand-by plants.

The attempts to produce synthetic rubber have been inspired by different motives throughout its history. The early workers were activated by the academic urge to produce a synthetic product as a means of confirming what was at that time thought to be the constitution of the natural product. Later research attempted to produce synthetic rubber to meet the great demand and high price (10s. per pound in 1910) of the natural product. Still later attempts were based on efforts to produce a synthetic rubber which would have properties (e.g. oil resistance) not possessed by the natural product: in other words, it was to be an addition rather than a replacement.

Lastly, we have had the very largely successful American effort during the last war to produce a general-purpose rubber capable of replacing the natural rubber for practically all applications.

All the synthetic rubbers, however, suffer from one defect: they are not quite as elastic (resilient) as the natural product. This is of great importance in one major application, namely giant tyres. The lower resilience leads to greater heat build-up, with consequent destruction of the tyres in service. (In the case of smaller tyres the smaller bulk of the rubber and consequent greater air cooling offsets to a large extent this serious defect.) Giant tyres, therefore, during the last war were made largely from natural rubber obtained from Ceylon and other sources still available to the Allies.

Development of Cold Rubber

Since the end of the war a great deal of development work has been done in the United States. The Americans have now produced what is generally known as "cold rubber." Used in combination with special carbon blacks it has a greater resistance to abrasion than natural rubber: in other words, tyres with treads made from cold rubber give a greater mileage in use.

Another synthetic rubber (butyl) gives inner tubes which only require to be topped up at far greater intervals than those made from the natural product. Yet another (neoprene) gives cables and conveyor belts for use in coal mines which are non-inflammable and cannot be ignited by friction (e.g. by jamming of the belt). A third synthetic rubber (high-styrene rubber) gives soles which can be manipulated like leather. There are many other examples, including use in indoor paints, of special application.

What does this all lead to? It means that unless these special synthetic rubbers are made available in this country our rubber manufacturer will be at a great disadvantage in competition with American concerns in overseas markets.

Our rubber exports are of considerable value, and everything should be done to maintain or even improve them. It is a well-known fact that research and development work are only really effective when backed by actual manufacture, and it is possible that a still better synthetic product might be discovered. We should like this discovery to be made in this country or, better still, by our own Company.

BETTER PACKAGING

Mr. G. M. Ashwell, I.C.I. Packages Adviser, is a recognised authority on the subject of packaging. He was recently the leader of a team of specialists which visited the United States to study American packaging methods. This visit was under the auspices of the Anglo-American Council of Productivity. The team's report was widely welcomed and over 20,000 copies were distributed.

The importance of packaging to I.C.I. is obvious from the fact that our annual expenditure under this heading is around £8 million. This figure includes the cost of new packages and of maintaining a large system of returnable containers.

The range of packages used in I.C.I. is probably wider and more varied than in any other organisation in the country. From tank wagons and heavy industrial packages to small containers such as phials and drug ampoules, together with small packages for direct sale to customers over shop counters, there is hardly any class of container which I.C.I. does not use.

At the present time there is a serious shortage of suitable materials for packages. This is due in the main to demand having overrun supply; but it is also due to political difficulties, such as those which have reduced supplies of jute from Pakistan and India.

All Divisions now have packaging managers or advisers. This team, whose work is co-ordinated by the I.C.I. Packages Advisers' Section, has contributed much towards increased efficiency, as can be seen from the following examples chosen at random.

For instance, the close study of wrapping coated fabrics resulted in a saving of £5000 of brown paper per annum, and the cost of the provision of up-to-date gummed sealing tape dispensers was recovered in twelve months by savings in the use of gummed tape.

One of the problems affecting the economic use of multi-wall paper sacks was the entire absence of a satisfactory and inexpensive closing machine. At the instigation of the Company a range of closing machines was developed and is now available. These machines have been received with enthusiasm. In the short space of twelve months twenty-seven such units are in operation within our Divisions.

Polythene liners have enabled steel drums to be used in place of hardwood casks, which are now almost unobtainable. The substitution of fibreboard shipping cases in place of wooden cases has resulted in considerable savings. The use of a five-gallon machine-blown, straight-sided carboy, with a unique screw closure, in place of stoneware jars has resulted in a reduction in packaging costs of £14 per ton of a certain acid important for the export trade. The development of this container was instigated and assisted from within the Company; and it has now been accepted as a British standard, and will be used throughout the chemical industry when adequate supplies become available.

Data of developments and information coming from Divisions and headquarters are compiled in an I.C.I. packaging bulletin published every two months and distributed to Divisions, associated companies and overseas companies. A conference is held every six months of Divisional Packaging, Central Purchasing and Development Departments' personnel. By these means the spread of information is made possible.

THE DISCOVERY AND DEVELOPMENT OF 'TERYLENE'

By W. F. Osborne (Plastics Division)

'Terylene'—known in America as 'Fiber V'—is a British discovery. It is a synthetic fibre, in many respects superior to nylon. The story of the technical development of 'Terylene' by I.C.I. is told here as a prelude to an article which will appear in the June issue of the Magazine.

THE fibre-forming material, polyethylene terephthalate, was discovered in 1939 in the laboratories of the Calico Printers' Association by Mr. J. R. Whinfield (now in Plastics Division) and Dr. J. T. Dickson (now in Dyestuffs Division). The Ministry of Supply, realising the value of 'Terylene' for war-time uses, declared the patent secret and entrusted the next stage of the work to the Central Chemical Laboratory of the Department of Scientific and Industrial Research.

At the end of 1943, however, the Calico Printers' Association approached I.C.I. with a view to their assisting in the development of this new synthetic fibre. This approach led eventually to an agreement being reached between I.C.I. and the C.P.A. whereby I.C.I. acquired the world-wide exclusive rights to manufacture 'Terylene,' save only in the United States, where the rights to manufacture were acquired by du Pont, the inventors of nylon. Du Pont are now engaged in the development of this product in the United States under the name of 'Fiber V' and have recently announced their intention to manufacture it on the industrial scale.

The first spinning of 'Terylene' was done within I.C.I. by Dyestuffs Division in January 1944, a small amount of polymer obtained from Central Chemical Laboratory being spun into fibres from glass apparatus. On the results of this experiment I.C.I. formed its initial opinion of 'Terylene' as a textile fibre of potentially high merit, an opinion reinforced by later work in appraisal.

The next few years were occupied in getting together equipment—by Dyestuffs Division for the production of polymer on the laboratory scale, and by Plastics Division for spinning the polymer into fibres. Many frustrations and delays were encountered, and at one time 'Terylene' was being spun at Welwyn on a small-scale machine while builders were erecting the building overhead. In the earlier stages small rods of 'Terylene' polymer, sealed hermetically in glass as a protection against the pick-up of moisture en route, were rushed down overnight from Blackley to Welwyn, where some crude spinning equipment was available. These rods were immediately

spun into fibres, the bobbins of undrawn yarn being packed in 'Drikold' to prevent embrittlement and taken up overnight to Blackley for final drawing.

By the spring of 1947 the first full-size spinning equipment was completed at Welwyn and Dyestuffs Division were ready to produce polymer on the semi-technical scale of 20 tons a year. Unfortunately the changeover to large-scale equipment brought its own serious problems, and reasonably steady running conditions were not achieved until 1948.

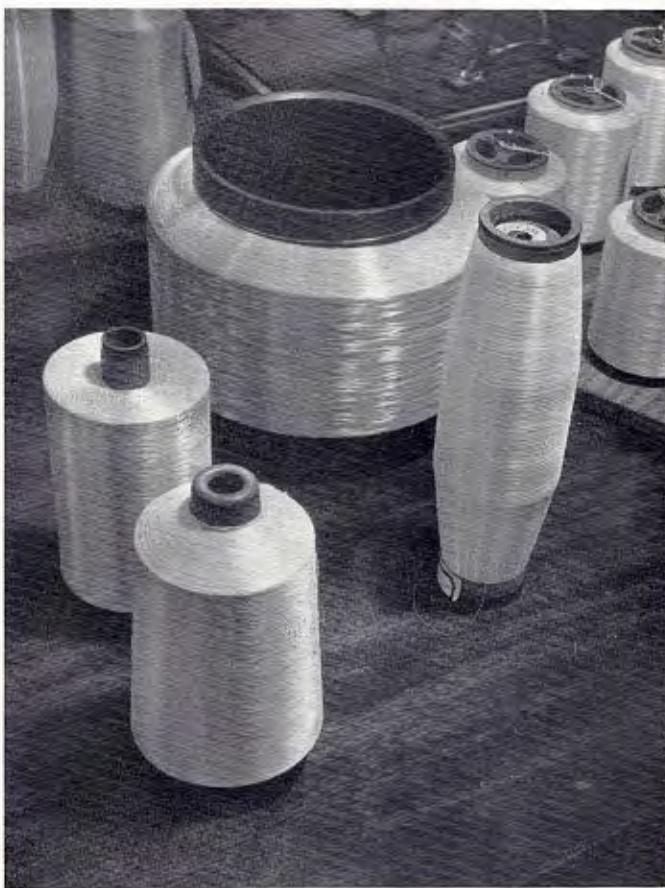
Having produced the fibre-forming material and converted

it into suitable yarns, the next step was to take these 'Terylene' yarns to the textile industry and find out what could be done with them. This led to an ever-increasing demand for the new product and to a conflict between the demands of production for appraisal purposes and the work of development on the polymer-making and spinning processes. To provide a sufficient supply of yarn for appraisal by the textile industry, and for other reasons, it was decided at the end of 1946 to construct pioneer polymer and spinning plants to produce about 50 tons a year of continuous-filament yarn.

The spinning plant was installed in an existing building in Hillhouse Factory near Fleetwood and the polymer plant at Huddersfield Works. Both of these plants were completed towards the end of 1949 and both have since been extended to bring the output of yarn up to about 300 tons a year. 'Terylene' in the form of continuous-

filament yarn will thus become available for experimental sales to the industry as well as for appraisal purposes, so that markets can be established for the products of the new plant at Wilton.

Three Divisions of I.C.I. will be involved in the full-scale manufacture of 'Terylene' at Wilton. Billingham Division will produce the essential raw materials—paraxylene and ethylene glycol—from its new oil-cracking plant and will also supply the large quantities of nitric acid used by Dyestuffs Division in the manufacture of the 'Terylene' polymer, the hard ivory-like fibre-forming substance which will be melted, extruded



Some samples of 'Terylene' yarn ready for despatch to the mills

and drawn into fibres by Plastics Division. Polymer and spinning plants are also to be built at Wilton, so that the 'Terylene' project figures largely in this new I.C.I. development site.

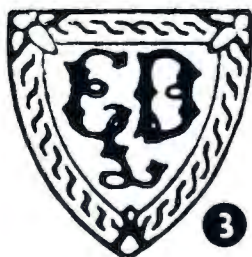
To cover the development stage of polymer manufacture large quantities of xylene concentrates were imported from the Near East. On one occasion the progress of a special tanker up the Red Sea right round to the English Channel was watched with some anxiety, as the licence had not then been obtained for import into this country. To make matters worse, the officer at the Board of Trade responsible for the issue of the licence was away being married when the anxious deputation from I.C.I. arrived at Horseferry House. Frantic telephone calls and the personal intervention of some senior Board of Trade officials enabled the licence to be issued almost as the tanker hove in sight.

The process of conversion of the polymer chip into the fine filaments from which textile fabrics can eventually be made is known as "melt spinning" and was first developed by du Pont for nylon. In this process the chips, having been dried so that they contain virtually no moisture, are melted (the melting point of 'Terylene' is about $264^{\circ}\text{C}.$), and the temperature of the molten material, which resembles a thick syrup, is raised to increase its fluidity so that it can be pumped at carefully regulated rates through a filter pack and out through a spinneret.

This for 'Terylene' is a steel plate pierced with very fine holes, each a few thousandths of an inch in diameter and made with a very high degree of accuracy. On emerging from the spinneret the streams of liquid freeze quickly into filaments, which are wound off simultaneously on to a spin bobbin to form a yarn. At this stage the yarn will stretch under light load and requires to be drawn in a separate process to develop its full strength. In the drawing process the yarn is slightly twisted to hold the filaments together, and thereafter it is ready for sale to the textile manufacturer.

DO YOU KNOW?

A. I.C.I. is made up of many companies, big and small, who before the 1920's had their own trade marks. Older mem-

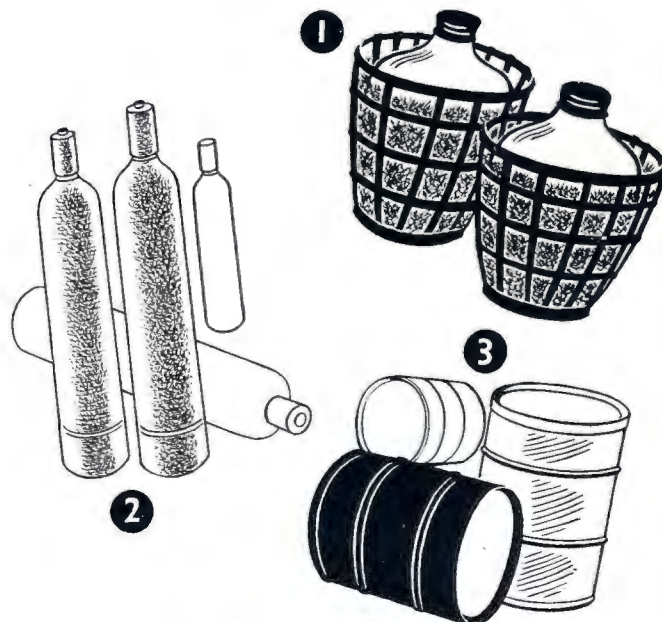


bers of I.C.I. may be able to recognise these. Name the firms which used these trade marks and say in which Division they are incorporated today.

B. Rivers as well as canals are often of use to I.C.I. One of these rivers has nothing to do with our manufacturing Divisions. The other four have quite a lot. Name the interloper.

(1) Weaver. (2) Tees. (3) Nene. (4) Wyre. (5) Mersey.

C. Name these three types of container:



Which of the following chemicals would each container hold?

(1) Sodium silicate. (2) Chlorine. (3) Hydrochloric acid.

D. One of these is *not* a subsidiary company of I.C.I.:

- (1) Lightning Fasteners Ltd.
- (2) Plant Protection Ltd.
- (3) Scottish Agricultural Industries Ltd.
- (4) Fyffe & Co. Ltd.

E. Pair these sites of I.C.I. works with the counties in which they stand:

Billingham
Oldbury
Runcorn
Smethwick
Widnes
Wilton

Cheshire
Durham
Lancashire
Staffordshire
Worcestershire
Yorkshire

F. I.C.I. has several authors among its employees. Can you name the titles and writers of the following works published in the last year or two?

- (1) A book of reminiscences about an oriental country.
- (2) A handsomely illustrated book on farming written for the layman.
- (3) A history of the chemical industry in a Lancashire town.

G. In the London telephone directory under Imperial Chemical Industries Ltd. are sixteen numbers on the automatic exchange alone (i.e. excluding Welwyn and Slough numbers). Name eight of the sixteen departments or sub-departments.

(For answers see page 156.)

I.C.I. AT THE FESTIVAL OF BRITAIN

I.C.I.'s contribution to the Festival of Britain falls mainly into two categories: materials manufactured by the Company and its subsidiaries which have gone into the construction of Festival exhibits and buildings; and samples of Divisional products shown at the various industrial exhibitions. Prominent among the Divisions which have contributed to the Festival Exhibition are Metals and Plastics.

THE Dome of Discovery, the central feature of the South Bank Exhibition which tells the story of British pre-eminence in discovery and exploration, has glistened in the rain and glimmered in the rare sunlight above the Festival site for several months. For its construction 136 tons of light, strong, durable 'Kynal' aluminium alloys, made by Metals Division, were used. To roof the vast dome, which covers an area of 99,767 sq. ft.—almost that of Trafalgar Square—86 tons of 'Kynal' cladding sheets were supplied by I.C.I. through the sub-contractors, and 50 tons of specially designed 'Kynal' extrusions were provided for the top corner and trough sections of the main-arch ribs. A major problem successfully solved by Metals Division was the precision bending of the 57-foot-long sections to the curvature of the dome.

'Holoplast' has been used extensively in the construction of Festival buildings—as acoustic ceiling in the promenades, foyers and other rooms of the Royal Festival Concert Hall; in pay-box units at the entrance to exhibitions; and for partitions and lavatory cubicles; and 'Corroplast' cladding has been used for the Pierhead Cafeteria. Doors for the television room and cinema on the South Bank site are made of 'Holoplast.' The enquiry building in Leicester Square is a gift to the Festival authorities from Holoplast Ltd.

Design from Crystals

Another contributor to the building of the Festival is the Leathercloth Division. Cinema chairs, the walls of the restaurant and telephone booths in the Science Exhibition are some examples of where 'Vynide' or 'Rexine' has been used.

'Vynide' is also displayed in the Festival Pattern Group Exhibition housed in the Dome of Discovery. These Festival pattern designs are something of a novelty. Their inspiration is the structure of the crystal as revealed not only in maps of crystal structure but also in the patterns set up when a narrow beam of X-rays is reflected from a small crystal about the size of a pinhead. In co-operation with the Council of Industrial Design Dr. Helen Megaw of Cambridge University suggested the application of these patterns to commercial design, and 'Vynide' is one of the chosen media for their display. The detail design work was done by the Leathercloth Division designer, Mr. C. C. Garnier.

The Pavilion of Power and Production, 33,000 sq. ft. in area, takes the story of British industry from raw materials to finished products. It will display the harnessing of power, the uses and processing of metals, the structure of British industry and the role of research, design and management in modern industrial organisation.

In this pavilion the story of metals is told—how they have replaced older materials and the ways in which they are manipulated for manifold uses. A section of the exhibition is devoted to research in dyestuffs and metals. Dyestuffs Division

have lent various exhibits, including a Marney dyeing machine with 'Perspex' sides, pieces of material showing various tests for fastness, and a collection of bottles containing intermediates which might be found in any typical research laboratory. Metals Division are providing samples of non-ferrous metals and displays of shotgun and rifle ammunition. Alkali, Billingham, General Chemicals and Nobel Divisions, Imperial Chemical (Pharmaceuticals) Ltd. and Lightning Fasteners Ltd. have been asked to contribute samples of the products they manufacture.

The Pavilion of Power and Production also houses the exhibition organised by the British Plastics Federation, in which there is a section entitled "How Things are Made," telling the story of plastics.

In these exhibitions 'Perspex' is widely used in making models and display pieces. Some of the most interesting models are to be found in the Dome of Discovery, where they illustrate the scientific section dealing with Matter and Energy, Atomic Theory and the Structure of Molecules. Polythene and 'Perspex' are featured as outstanding examples of British pioneering in the plastics industry. In the section describing the work of British scientists on crystal structure, Mr. Bunn's research on the structure of penicillin is acknowledged.

In the pavilions dealing with Sea and Ships, Transport, and Homes and Gardens plastics also play an important part, as the designers have been briefed to show many examples of plastics and products chosen from the stock list, e.g. plastic cups and saucers, trays, food-mixing machines, refrigerator parts and toys. In the Transport Pavilion the use of polythene in the manufacture of submarine cables is being featured.

Aluminium Railway Coach

Among the exhibits in the Transport Pavilion at the Festival will be a new type of lightweight railway coach, built in Birmingham by the Metropolitan-Cammell Carriage and Wagon Co. Ltd. It is the first railway coach in this country to be built of aluminium alloy and the first of a consignment of ninety coaches ordered for service in London. The aluminium alloy for all these coaches is being supplied by Waunarlwydd Works of Metals Division. The use of aluminium alloy in place of steel results in an estimated saving in weight of 3½ tons in each coach, with consequent economy in electric current needed to drive the vehicle.

As a contribution to the Festival of Britain, Plant Protection Ltd. is organising an international conference on crop protection problems in world agriculture. The King's speech at the opening of Parliament last year indicated that it was desirable that the Festival should include demonstrations of the service of science to agriculture as well as to industry. The conference will be attended by a large number of notable participants.



... where lions and
... tourists mix

A visit to the

KRUGER NATIONAL PARK

by W. M. Inman (Chairman of Alkali Division)

The Kruger National Park is one of the wonders of South Africa. There are no fences; but some instinct seems to tell the wild animals that here they may find safety and live at peace with man. In this article Mr. Inman relates of the animals he saw and photographed and describes an unusual incident when lion cubs played round his car.

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Take the case of a visit to the Kruger National Park in the eastern Transvaal. Many have enjoyed it, but so far as I remember no one has put his impressions on paper for the *Magazine*. To the actual visitor it is an intensely interesting trip, and having criticised the editor I can only make amends by offering an attempt at a sketch of the proceedings.

First of all, it is essential to secure an invitation, preferably from very nice people who have a large and comfortable motor car and who know all the ropes. There are various means of securing an invitation, some better than others, and the technique must naturally vary according to the personalities involved. It is a great pity to have to resort to the blunt question "How about a trip to the Game Reserve?"

I was lucky. Jack and Jill invited me and did not need any hint. These are not their real names, but they will easily be recognised by the initiated and it will be readily agreed that they are ideal hosts. Their car has a big boot which can accommodate frying pans and food as well as a reasonable amount of luggage. They have got entirely the right idea on food and drink and do not forget the bottle opener. They also believe in a meat diet, which all from Great Britain will applaud. They know the Game Reserve (South African for Kruger National Park) almost as well as a Lancastrian knows Old Trafford.

They even know Old Trafford, and in fact are absolutely the right people to be the ideal inviters.

The invitee arranges that he shall be called by a sleepy hotel porter at dawn; on a winter's day in Johannesburg that means 5.45 a.m., and it is cold. So is breakfast (if any), and the taxi ride to Jack and Jill's home is a bit nippy. From then onwards things brighten up immensely. There is a cup of hot coffee before loading up the car, the sun has appeared, and life brightens remarkably. At 7.15 we are off on Stage one of our 290-mile motor run.

Stage two is at elevenish, with a pause for refreshment and a call at a village store to buy biscuits, oranges, tinned sausages, Nescafé, bread and a few vegetables. Man cannot live on meat alone.

On the High Veldt

Stage three is quite a long way on, and road conditions have now become less civilised. We have left the tarmac far behind and are on dirt roads, but can and do travel at a high speed. In fact the bumps and lumps of a dirt road are intolerable at too low a speed for both car and passengers; for once it is right to hit the high spots only. The first 180 or so miles are still on the high veldt, i.e. over 5000 feet above sea level; then come many miles of descent down Schoeman's Kloof, and Jack remarks that the temperature will rise about one degree for each five minutes we travel. It does, and down at Nelspruit it is at least pleasantly warm. Here we are nearing Stage three, a very welcome halt for lunch. This occurs chez Bobby, who grows oranges on a delightful farm at Plaston. Bobby seems



(By courtesy of South African Railways)

AN UNUSUAL ROAD BLOCK: A lion and lioness basking in the sun

to be a practical farmer (as defined by a well-known South African writer), since he allows the Government to do practically everything for him. He just grows oranges. They do the rest.

The entrance to the Game Reserve is a mere thirty-odd miles from Plaston, and it is high time this narrative said something about it. Its official title is the Kruger National Park and it dates from 1898, when at the instance of President Kruger a tract of land in the eastern Transvaal bordering on Portuguese East Africa was set aside by the Government of the Transvaal Republic for the preservation of wild life. The tract was added to after the Boer War and is now about 200 miles long (north to south) and from 30 to 60 miles wide. The total area is about 8000 square miles, and with the exception of wardens' homes and visitors' rest camps is uninhabited by humans. There are no fences except road gates, which are control points for visitors and at which entrance fees are collected.

Fear Banished

Why, then, do the animals in the reserve stay there? The answer is that inside the reserve they live at peace with man and merely fight each other; if they stray into man's domain he hunts them. Some instinct keeps them to the relative safety of their own 8000 square miles.

Some other factor makes them tolerate motor cars. It is thought that they merely smell petrol, oil and rubber and so

cannot scent the possible enemy inside all those harmless smells. One can, therefore, drive a car slowly along the narrow dirt roads of the reserve without alarming animals close by, and they can be studied at leisure and in comfort and safety except in the case of the elephant.

On arrival at the gate Jack paid our fees and produced his revolver for sealing. Visitors are allowed to take an approved firearm into the reserve for self-defence in emergency. It is sealed on arrival and must be produced with the seal intact on departure or a good account given as to why it was used. It is for self-defence, not fun and games.

The rest camp is a few miles from the gate. The fence round the camp looks quite inadequate, as it is ordinary chain mesh wire fencing about 4 ft. 6 in. high and would not deter a frolicsome lion in the least. Fortunately lions and other large animals love us even less than we do them, and although they can be heard at night roaring in the near distance, they don't come very close to the camp.

Accommodation in the camp varies from a spot on which to pitch your own bivouac to luxury cottages with two bedrooms, bathroom, kitchen and a spacious stoep (veranda) enclosed by mosquito-proof wire mesh. We did not bivouac.

The camp has electric light whenever the petrol-electric set can be persuaded to work. On other occasions hurricane lamps are provided. We had lamps.

The procedure on arrival is to dump the baggage, hop back into the car and use the remaining hour or so of daylight in the hope of seeing a lion. We didn't see one. Why it should be considered the hallmark of a successful visit to the Game Reserve to see a lion I cannot understand, but quite definitely it is, and if no lion obliges by putting in an appearance the hosts are most disappointed. You may be thrilled by the sight of wildebeeste (gnu) grazing stolidly or by impala leaping over a road or having their elevenses at a water-hole, but this is all too ordinary for the regulars. You cannot help meeting up with innumerable wildebeeste, impala and zebra, but other animals, such as kudu, warthog, sable, giraffe and elephant are scarcer. Carnivora, such as lions, leopards and cheetahs, do their hunting at night and are usually only seen at dusk or dawn when they leave their daytime resting place for their chosen hunting ground or are returning to lie up and sleep off the night-time feast of zebra, etc.

On the evening of our arrival we saw only kudu and waterbuck in addition to the usual herds of gnu and impala. This was considered a poor show, particularly as on returning to camp we heard a lion not far away. He was obviously interested in eats. So was I, and therefore I was a very willing helper at the bar and later in the kitchen. I soon lost the kitchen job, as Jill did not seem to need my assistance or even



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IMPALA TAKING THEIR ELEVENSES: *a beautiful snapshot taken by the author at a drinking hole near*

regard it very highly. We ate. We drank. We smoked. We talked. Then from 9 p.m. we slept.

You turn in early in the Game Reserve, and it is a wise precaution, as you have to turn out into the chilly pre-dawn period of 5.15 a.m. At that bleak hour you have a cup of Nescafé and bless its inventor, rub the bristles on your chin and wonder whether to remove them now or later, whether your hostess is observant enough to notice them and whether she would care two hoots anyhow. Finally, being quite unable to decide any such really tough problems, you get into a thick overcoat, collect your camera and field-glasses and parade

alongside the car in time to start off as soon as the camp gates open.

Again you patrol the near-by roads at what seems a snail's pace, and you certainly see and probably photograph quite a lot of animals you have never seen before. Even if you have seen them in a zoo, they look quite different now. They are at home, and barring a casual look at your car they carry on with their normal home life. A word of warning to future novices is appropriate here. You cannot get really good photographs in the half-light of early morning or late evening if the car engine is running. You need a reasonably long exposure,



one of the main roads

and the vibration of the car makes even one-fiftieth of a second too long for a shake-free picture. I discovered this too late—much too late—and so have many snaps which I alone can recognise.

This gentle motor exercise passes the time very quickly, and you note the following symptoms. First the light becomes brilliant, second you shed your overcoat, and third your abdominal alarm clock says breakfast. You then know that it is 8 a.m. and find that Jack, the reliable, has the nose of the car pointed towards the camp entrance and that all is well.

Breakfast, a shave, a bath and some light clothes then fit you

for more motoring. Off you go to Skukuza, another camp about 35 miles away near the Portuguese border. More prayer from Jack and Jill that a pride of lions will appear, but of course there is nothing doing. You are content with baboon, giraffe, warthog, duiker, stembok and jackal as well as the ever-present zebra, wildebeest and impala.

Twenty Questions

You ask questions and get answers, many of which must be correct. Pretorius Kop is named after Andries Pretorius, who had several arguments with the British and the Zulus round about 1840. Some of these were more successful than others; and one against the Zulu chief Dingaan at Blood River was such an outstanding achievement that Dingaan's Day is a public holiday in South Africa. Pretoria was also named after Andries, but that capital city seems less important than the Kop at the moment. Skukuza clearly floors your informants, though they do try bravely with the suggestion that it is the native name for Lt.-Col. J. Stevenson-Hamilton, who was Game Warden from about 1902 to 1946 and is greatly esteemed by South Africans. The word is said to be vividly descriptive of the man himself.

At Skukuza camp your thirst for truth leads you to ask an Afrikaner warden and a native warden for confirmation of the story. You are wasting your time. Jack is secretly relieved, Jill continues to admire the depth of her partner's knowledge; and you still wonder what Skukuza means—as if it mattered.

The afternoon opens by photographing the notice "Beware of Elephants" which stands at the entrance to the Lower Sabie road. Again the demon questioner asks, how does one beware of elephants, and why? The "why" is easy. If they object to your presence they may charge the car and then trample on it and you until both are considered to be flat enough to warrant no further attention. The "how" is more difficult. Theories vary between stopping the car and waiting for the elephant to decide on pastures new, i.e. some other spot where there are better and more succulent trees to be pushed over, and getting smartly into reverse and retiring in good order. We did not see any elephants, so I cannot pronounce on this most interesting subject.

The Hippo Pool

Your next experience is to visit the hippo pool on the Sabie river. At the appointed place you leave the car and walk a few hundred yards along a path through the bush. You think of black mambas, puff adders, lions and elephants. But nothing happens, and you find it most consoling that in their opinion you personally are an obnoxious animal. You have more to fear when you cross the "bridge" over the river. This is a curious assortment of 6 ft. lengths of narrow planks nailed to curved ribs and placed precariously on boulders sticking up out of a fairly rapid river. They wobble, and you now think of crocodiles, wet clothes and sprained ankles; but still nothing happens, except that you get across and can see the hippos doing their semi-submarine act. You photograph them hopefully and get a good view of a river with marks on it which you can say are hippos and no one can contradict you.

Back over the bridge and more snakephobia until the car is reached, and as dusk approaches more regrets from Jack and Jill that there are no lions in this bit of Africa today. Just short of the camp gate Jack decides on one more short run to Jock of the Bushveldt Road, where there always have been

lions. Jill fears that we shall be too late to get back to camp before the gates close and shall incur the disgrace of a *ros. fine*. Jill is driving and nearly gains her point, but masculine optimism and obstinacy prevail and are rewarded.

At the corner of Jock of the Bushveldt Road we see a lion—a real live black-maned lion. We stop the car and he stands and watches us. After a while he evidently gives the all-clear to his neighbours and their wives and families, as in next to no time sixteen lions (including cubs) are on view. The adults come close enough to inspect our car, and you get the feeling that instead of going to the zoo to look at lions,



(RIGHT) A ROAD SIGN *in the park*, photographed by the author



matters are very much in reverse and the zoo has come to look at you.

The cubs decide to inspect the next car behind you, which has just arrived. This turns slowly round and goes back towards camp. You decide that you must make a move in that direction also, and by the time you have turned round seven cubs have concluded that the other car is not very interesting and wait to see what you are like. You approach them at a crawl and they separate to allow the car to pass, but it doesn't pass without incident. Although the cubs are almost fully grown they are still as playful as kittens and nice white revolving things like car tyres are obviously made for patting. Visions of flat tyres flash before you, but all that happens is a few near misses on wings and door. You proceed, as the police would say (and you do it at a truly policeman-like pace), towards camp. The cubs still play around, and two alert if not anxious mamma lions walk alongside at a few yards' range just to see fair play. One cub gets a little too near in front and Jill puts the brake on. The red spotlight flashes on and one of the cubs behind the car tries to knock it out. Another near miss, and the bumper rings from the smack of his paw.

You still proceed sedately, and within a few hundred yards of the camp mamma calls the game off and your lions and cubs disappear in the gloom.

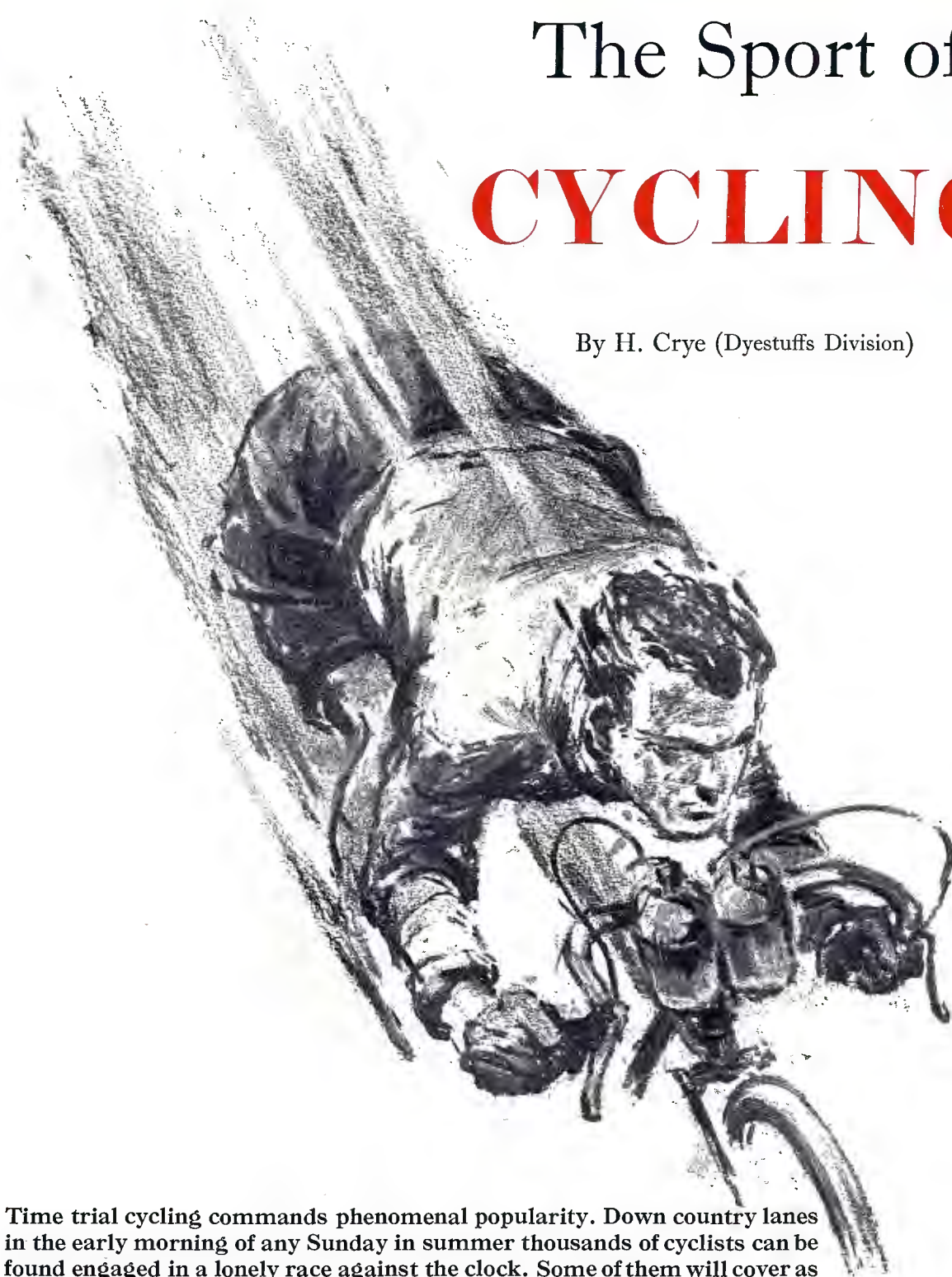
You are late. The camp gate is closed, and when it is reopened you pay your fine. It was worth it. You have had a great day. Then back to Johannesburg with its mixture of mine dumps and skyscrapers and an awakening to the need to resume work tomorrow. It has been a glorious interlude and you cannot thank your hosts too much.



KUDU, ZEBRA AND WILDEBEESTE DRINKING: the kudu are on the left, the zebra on the right, and the wildebeeste behind

The Sport of **CYCLING**

By H. Crye (Dyestuffs Division)



Time trial cycling commands phenomenal popularity. Down country lanes in the early morning of any Sunday in summer thousands of cyclists can be found engaged in a lonely race against the clock. Some of them will cover as much as 2000 miles in a season at an average speed of over 20 miles an hour.

EVERY Sunday morning throughout Great Britain, from late February to late October, thousands of cyclists clad in sombre shorts and jerseys may be seen presenting themselves between 5 and 9 a.m. to timekeepers who stand in lonely lanes ready to despatch them at minute intervals. They pursue their way along a stated route, checked here and marshalled there, entirely unpaced, until they return eventually to the timekeeper. No shouting crowds, no feverish

excitement—only the morning sun (or rain), a farmhand or two, and a bunch of interested clubmen to encourage them on their way.

These cyclists are competitors in road time trial events, which are conducted on a hush-hush basis on country roads with no press publicity except for results.

In time-trialling there can be no jockeying for position, no tactics or special technique—just a straightforward ride as fast



THE START OF THE 120 MILES race from Windsor Great Park, when H.R.H. the Duke of

as the rider can go for the distance. The rider recording fastest time wins the event. There may be a hundred riders in the event, the first man starting at (say) 6.01 a.m. and the others at minute intervals until 7.40 a.m., when No. 100 has gone on his way. So it will be seen that the winner of the event may be anywhere in the field and is not known until the last man has finished. The race is against the clock, so it behoves every man to do his best, for somewhere (he doesn't know where) his rival may be running him close. Sometimes handicaps are run, the riders being awarded so much time against the scratch man according to their previous performances. These times are then deducted from their actual times to find the winner.

The distances of these events are 25, 30, 50 and 100 miles; there are also 12- and 24-hour trials. In the 12-hour and 24-hour events riders start at minute intervals. They finish exactly twelve or twenty-four hours after they have started, the distance covered being marked on an already measured course. The rider who covers the greatest distance is the winner.

All the events run under Road Time Trial Council rules and regulations conform to strict standards. They must finish close to the start within a given distance, and have become known as "out and home" events. There is thus no chance of a wind behind all the way, with disastrous results to competition records. It may be argued that a wind which changed round half-way through the event would have the same result, but the chance is remote, and my personal experience of winds changing round has been only with those in opposition both ways!

Publicity Shunned

Another regulation is that no piece of road must be traversed more than twice, and this again preserves the "out and home" aspect. Riders must ride entirely alone and unpaced (if they catch other riders they must pass as far apart on the road as practicable). Dress must be quiet and on the dark side, for publicity of any kind is shunned. Timekeepers must have qualified watches, tested to the Horological Institute standard each year. And the courses over which the events are run

must be measured with great accuracy. For instance, it is not considered too meticulous to measure a hundred-mile course to within sixty yards.

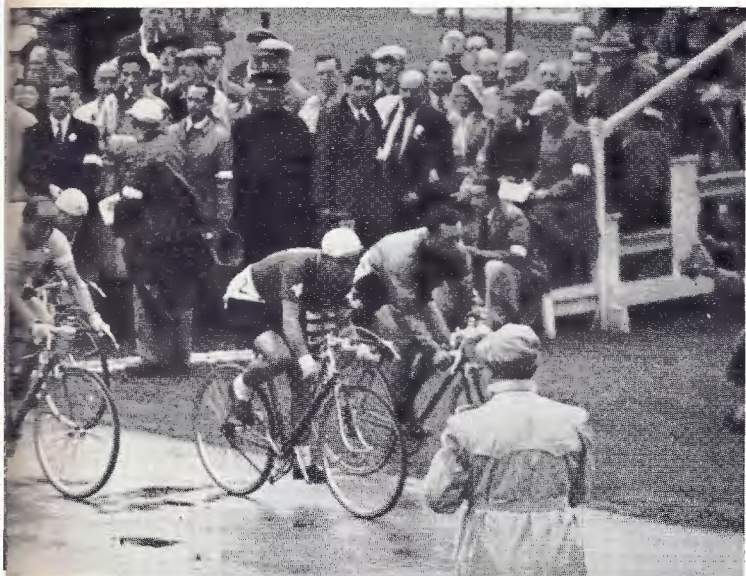
In all these competitive events the R.T.T.C. recognises records. The present ones are of extremely high performances and all, of course, amateur. They are 58 m. 0 s. for the 25 miles, 1 h. 59 m. 14 s. for the 50 miles, and 4 h. 12 m. 22 s. for the 100 miles. And 259.23 miles has been done in twelve hours and 459.5 miles in twenty-four. How would you like to drive a car (not ride a bicycle) from London to Manchester and back, and then go on to Brighton and back as an encore before you finished the day's run? Formidable, isn't it!

Widespread Popularity

In England and Wales and Northern Ireland alone there are approximately 1000 clubs affiliated to the R.T.T.C., and there must be upwards of 6000 cyclists trying to beat the clock on any Sunday morning during the summer in these areas. (Scotland has its own organisation, which is closely modelled on the R.T.T.C.). In the Manchester district during the past season 4800 cyclists rode in events open to all riders, and at least an equal number must have indulged in closed club events (organised by clubs for their own riders). Some riders cover as much as 1500 miles of pure racing in a season—say two 12-hour events, four at 100 miles, six at 50 miles and eight at 25 miles. If a 24-hour ride is done the season's total may be 2000 miles, most of it being ridden at well over 21 m.p.h.!

There is a Best All-rounder competition organised each season by the R.T.T.C., the speed average of a rider's best performances at 50 and 100 miles and 12 hours being taken, the man with the best average being declared the winner. Last year the winner was Ken Joy of Medway Wheelers (a southern club), with an average of 23.330 m.p.h. He took 2 h. 1 m. 4s. for the 50 miles, 4 h. 13 m. 34 s. for the 100 miles, and did 258.57 miles in 12 hours. Altogether, over 600 riders covered these three distances at an average of more than 20 m.p.h. in last year's competition.

In all these aspects of the time trial game women have similar organisations to cover their activities, and they ride against the clock with great zest in races run specially for them.



Edinburgh acted as official starter

(Photo: Fox Photos)

Men and women are not allowed to mix on the road in competition, one suggestion being that a male might, out of sheer chivalry, slow down to let his fair opponent beat him. On the other hand, some women are so fast these days (on bicycles!) that to be overtaken and "dropped" by a flying female would be just too horribly humiliating for any man. This is no exaggeration, either. Eileen Sheridan, to take just one girl, in a 1949 12-hour event covered 237 miles—a much greater distance than thousands of would-be speedmen will ever achieve in their careers.

As a direct contrast to lonely time-trialing, massed-start road racing is much akin to track racing, all the riders starting together but riding usually in teams of four. The race goes to the individual, of course, but most races include a team prize, and without the help of his team mates only a rider of outstanding ability can hope to win. For instance, when a rider breaks away from the bunch with a good chance of staying out in front his team-mates co-operate to slow down the rest of the field by going to the front and then easing up, doing this continually as other riders try to take the lead.

In this country officially recognised massed-start racing is confined to one or two private estates, to aerodrome perimeters, and, in the Isle of Man, to the public road at specific times. The massed-start Olympic Road Race was held in Windsor Great Park by royal permission, and was followed with great interest by the Duke of Edinburgh. English law does not permit racing on the road (time-trialling is not racing, by definition).

Unlike this country, road racing on the Continent is a highly developed affair, and the winners of big professional races become almost national heroes. The Tour de France occupies 28 days, on 22 of which the riders cover various stages from

place to place, the event starting and ending in Paris and covering a total distance of 2800 miles. "Tour fever" is at its height during July. All traffic is stopped on that part of the route which the riders are passing and the French public goes wild with excitement.

The winner in 1949, Fausto Coppi of Italy, is perhaps the greatest cyclist of the day. Within a month of winning this most gruelling race of nearly 3000 miles he won the World Pursuit (Track) Championship at Copenhagen over a distance of approximately 3 miles—and with such ease as to make his performance appear colourless. Two days later he dominated the World Road Title Race over a distance of 116 miles, failing to win it only because there was no hill on which to drop his opponents! He was outsprinted in a bunch finish. Last year he was out of competition due to an accident.

Continued Fascination

Most of my eighteen seasons of competitive cycling have been spent on the road, and I must admit that the fascination of continued endeavour to beat the clock at various distances is something more than the beating of one's rivals and/or the elements. No matter how arduous the ride or the state one may be in at the finish, it is almost inevitable that one comes back for more. It was the great French rider Francis Pelissier (a winner of the Tour de France) who said: "When your legs ache and your lungs are bursting, when your head begins to swim and your body is strained in agony—that is the time to grit your teeth with determination and make your effort."

He was a professional rider, of course, and amateur sport hardly calls for that much suffering; nevertheless there is no doubt that the overcoming of such difficulties and the determination to win through, particularly in long-distance road events, is in itself a character-forming episode in any person's life. The Greeks, however, had a word for it, and I am sure that some of my friends who read this will have one too!

It is a great game, full of happy memories and amusing incidents. One in particular I remember; my clubmates frankly disbelieved me until they later saw the proof for themselves. It was during a road race in Cheshire. I had covered thirty of the fifty miles and was getting my second wind while climbing the long hill into Holmes Chapel village, when sud-

denly across the narrow road at the top (and across my sweat-smearing vision) walked two huge elephants, trunk to tail. I had been feeling pretty bad on the way up, but not that bad! In any case they were not pink, although my clubmates at first thought otherwise. Herds of cattle on the road are the bane of the time trial rider's life, and many times I have slapped my way vigorously through them while losing those vital seconds for a possible victory.

Of all the forms of competitive cycling, including the spectacular and specialised track racing, or colourful massed start

road events, for sheer sport and the pure spirit of healthy competition which is inherent in us—give me time trial road sport every time.



Ken Joy



Eileen Sheridan



WORKS COUNCIL ELECTIONS 1951

ONCE more the time has come when workers throughout I.C.I. have the responsible task of electing their representatives to sit with the management representatives on the ninety-seven works councils within the I.C.I. Works Council Scheme.

Posters have by now been displayed giving the

date of the elections and setting out the qualifications for voters and candidates, the number of representatives for each ward, the procedure for the nomination of candidates, and all other matters affecting election procedure. Some may feel that too much red tape and printed matter are in evidence at election time. On the other hand, the

Works Council is an important body and elections should be conducted in a dignified and constitutional manner. For this reason the I.C.I. procedure has been modelled closely on that adopted for parliamentary elections.

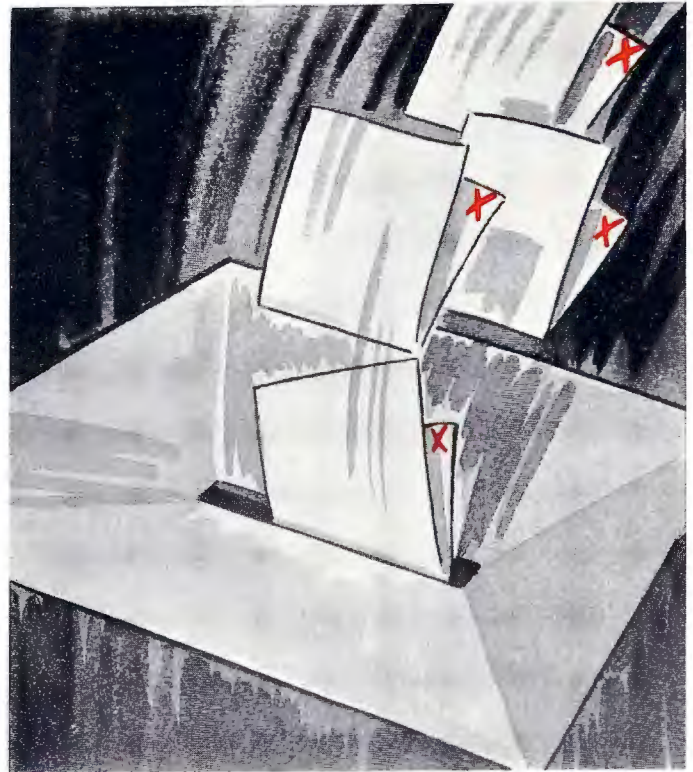
Relationship with Unions

The Works Council provides a recognised and direct channel of communication between the employees and the management on matters directly affecting their joint and several interests, subject to the provision that it shall not discuss matters which are the subject of an operative agreement between the Company and any trade union, except by written consent of the trade union concerned. With this proviso, therefore, it is the formal means by which views on important matters may be brought to the notice of the management. The management for its part consults with the councils on many problems to which a proper solution is essential to the wellbeing of the works. Through the councils also the management sends out information about the state of trade, future production plans, and numerous other questions of general concern.

Importance of Voting

Clearly, if these functions are to be properly fulfilled, it is essential to have on the councils those best qualified to act in a truly representative capacity and to contribute most effectively to the discussions which take place. The way to ensure this is for every eligible employee to exercise his or her right to vote, to choose wisely, and then to support the successful candidate.

The scope of the councils is wide; the responsibilities of the councillors are heavy. But with the enthusiastic backing of the electorate they will be encouraged to tackle with energy the many and varied problems which arise.



X MARKS THE SPOT

**where you can
have your say
without fear or
favour**

**Have the man you choose
to air your views**

TAKE THE TROUBLE TO

VOTE

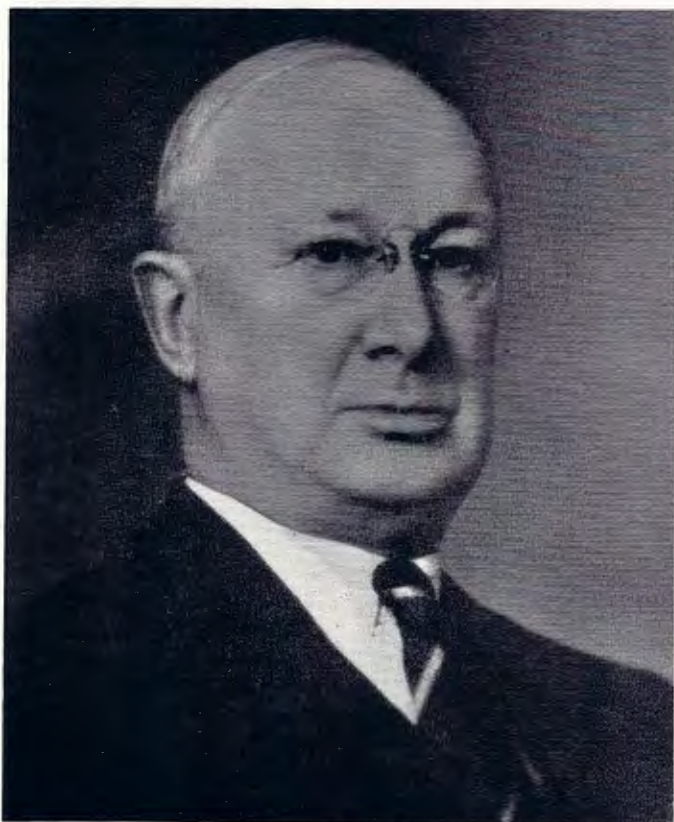
IN THE FORTHCOMING ELECTION

I.C.I. NEWS

The Late Sir Holbrook Gaskell

We record with deepest regret that Sir Holbrook Gaskell, a former director of I.C.I., died very suddenly on 31st March in his 73rd year.

Sir Holbrook Gaskell bore a name that has been known in the British chemical industry for nearly a hundred years. His grandfather, the first Holbrook Gaskell, who had previously been in partnership with James Nasmyth, the inventor of the steam hammer, started at Widnes in 1855 the chemical works of Gaskell, Deacon & Co., and the Gaskell-Deacon Works still flourish as a unit of General Chemicals Division.



The late Sir Holbrook Gaskell

The second Holbrook Gaskell, eldest son of the founder of Gaskell, Deacon & Co., was also a partner in the firm and subsequently one of the original directors of the United Alkali Co., remaining a member of the board until his death.

The late Sir Holbrook Gaskell, son of the second Holbrook Gaskell, was an engineer by training. Educated at Rugby and Trinity College, Cambridge, he joined the United Alkali Co. at Widnes in 1901 and in 1914 became Chief Engineer. He

was appointed a director of that company in 1922 and Managing Director in 1926.

In 1928, two years after the formation of I.C.I., he came to London as technical assistant to Lt.-Col. G. P. Pollitt and in 1929 became vice-chairman of the executive board of the General Chemical Group and also of the Lime Group.

In 1931 he was appointed chairman of the General Chemical Group and continued in that capacity on his appointment to the Board of I.C.I. in 1934.

Sir Holbrook Gaskell retired from the Company's service in 1946. He was knighted in 1942.

Mr. F. H. Bramwell, Chief Engineer at General Chemicals Division, has written the following appreciation of Sir Holbrook:

I feel it is a privilege to have been asked to write a few personal notes in tribute to a man so loved and respected by those who worked with him and for him as Sir Holbrook Gaskell. He was always an inspiring influence to all who came in contact with him, and I have always regretted that I did not know him in the years before I.C.I. was formed.

Our paths first crossed before the war, when we were both at Head Office in London. Later, at the beginning of the war, he went to the north-west to act there for the Board in case London should be rendered untenable by enemy action, and we both lived for some years at the Highlands Club in Runcorn.

Sir Holbrook never spared himself throughout the war; his country was fighting with its back to the wall and he refused to relax, working all day, every day and far into the night. Among his many activities at this time he held discussions with Government officials which led to the General Chemicals Division being entrusted by the Ministry of Supply with the construction and operation of factories for the production of certain war gases and the necessary intermediate chemicals.

During this period, those of us who were working on the war gas project were brought into intimate contact with Sir Holbrook at the Highlands Club, and we learned to appreciate the sterling and remarkable qualities that he possessed. He had all the breadth of vision and grasp of essentials so appropriate to his position as a director of I.C.I., and at the same time his appreciation and knowledge of detail, combined with a magnificent memory, were a revelation to us all. With his wide experience of the design, construction, and operation of chemical plants he was able to grasp at once our problems and difficulties, and his suggestions and comments were always most helpful and practical.

We found, too, that the better we knew him as a man the more we loved him for his quiet sympathy and understanding. He reached the top of his profession and was knighted for his outstanding services to the country, yet he remained simple in his tastes and was fully at home in any company. He was as easily approached by the most junior as by the senior

members of the Company, and his advice and knowledge were freely given to all.

He had many hobbies. In his younger days he was a member of the Royal Mersey Yacht Club and was a keen owner and sailor of boats. It is typical of his thoroughness that he qualified for and held a yacht master's certificate, and on one occasion navigated a steamer across the Pacific.

As he became older and more immersed in work he took an interest in model yachts, constructing a most complete and beautiful model with his own hands. He was never satisfied with anything less than the best, and when at one time he became interested in the metacentric shelf theory of yacht design of Admiral Turner he quickly pointed out certain errors and established the necessary corrections.

Another of his interests outside his work was the collection of old prints, on which he was an acknowledged authority.

Although he never paraded his views or forced them on others, he was a sincere and devout Christian. He never did a mean or unworthy action, in fact meanness of any kind was entirely foreign to his character. I would like to end these brief notes by paying tribute, on behalf of myself and all who knew him, to the memory of a great Christian gentleman, an inspiring leader and a true friend.

Kynoch Team wins First Aid Trophy

At the finals of the twelfth annual I.C.I. First Aid Competition held in Central Hall, Westminster, on 13th March, the Kynoch team (Metals Division) won the trophy, the Welwyn team (Plastics Division) being runners-up. The examiners were Dr. S. W. Fisher, Honorary Physician to the King, who set the team test; and Dr. J. Gwynne Morgan, C.B.E., T.D., Chief Medical Officer to the Mond Nickel Company, who was in charge of the individual tests.

This year eleven teams—one from each Division—took part in the final competition. With the exception of Hyde, which is the only team in the Leathercloth Division, all the teams had taken part in eliminating rounds in their own Divisions, in some instances competing for trophies which had been in existence before I.C.I. was formed. Despite not having competed in an eliminating round, the Hyde team succeeded in gaining third place in the final.

The competition was in two parts—a team test, and an individual test for each member of the team. As an innovation this year the individual tests were held in public; these included practical work on a casualty of the kind that a first-aid might well have to deal with single-handed in real life.

Commenting on the results, the examiners both emphasised the necessity for skilled and efficient first-aiders and mentioned that theory tests are frequently just memory tests. They congratulated the teams on the sporting way in which they took the verdict, pointing out that it does not always follow that it is the best team as far as knowledge is concerned that wins or loses.

Dr. Amor, the Company's Principal Medical Officer, also addressed the teams and their supporters, quoting figures in regard to man-hours lost through accidents, and appealed for greater efforts to get people interested in this voluntary service.

Mr. H. O. Smith, Personnel Director, presented the trophy to the captain of the winning team, and medals to each member of that team, and to the runners-up.

The trophy and medals engraved with the holders' names



Mr. H. O. Smith presenting the trophy to the winning team

will be presented again to the winners at the next meeting of the Central Works Council.

A large audience, including many representatives from the Divisions taking part, watched the competition, which lasted all day. Dr. A. Fleck and Mr. W. F. Lutyens looked in during part of the proceedings.

Great credit for the realism with which the various tests were carried out is due to the volunteers from the Casualties Union who acted as the injured. Their portrayal by realistic make-up and staging of the various situations with which the competing teams and individuals were confronted contributed in no small way to the success of the competition.

The full results were as follows:

Team	Team Test (200 pts.)	Individual Test (200 pts.)	Combined Tests (400 pts.)
Metals (Kynoch) ..	183½	136	319½
Plastics (Welwyn) ..	170	138	308
Leathercloth (Hyde) ..	171½	136	307½
Billingham (Anhydrite Mine)	165½	139	304½
Nobel (Ardeer) ..	166	117	283
Alkali (Winnington) ..	147	129	276
Lime (South Central Workshops)	129	145	274
Salt (Winsford) ..	132	136	268
General Chemicals (Castner-Kellner)	120	145	265
Dyestuffs (Huddersfield)	160	104	264
Paints (Stowmarket) ..	154½	93½	248

The First Aid Competition was started in 1932 to encourage first aid on a voluntary basis, but no contests were held during the years 1940-7. The Company is keenly interested in encouraging its employees to become skilled first-aiders, as this work is considered to be of very great importance. A further encouragement is a weekly bonus of 2s. which is paid to voluntary first-aiders in certain sections of the Company. The object of fostering first aid, however, is not to replace the

professional services but to supplement them, although in some of the works first-aiders take over the responsibility of being available at any accidents which occur when the medical staff are off duty.



The runners-up—the Welwyn team—during a test

New recruits are urgently required to take the place of older members who are gradually retiring, and it is regrettable that not enough of the younger generation are volunteering to ensure that there will always be a sufficient number of competent first-aiders in an emergency to attend to the injured before professional assistance is at hand.

Mr. H. A. Humphrey

We record with deep regret that Mr. H. A. Humphrey, Chief Consulting Engineer of I.C.I. from the formation of the Company until he retired in 1931 and a pioneer of Billingham, died in South Africa on 9th March, in his eighty-third year.

Mr. H. A. Humphrey, the inventor of the pump known by his name and a highly distinguished engineer, joined Brunner, Mond & Co. Ltd. in 1890 and from 1900 to 1915 was their consulting engineer. During the 1914-18 war, as an assistant director of the Department of Explosives Supply, he contributed much to the successful efforts that were made to meet the demand for high explosives.

From 1919 to 1927 he was again consulting engineer to Brunner, Mond & Co. and played an important part in the design of the synthetic ammonia plant at Billingham.

A personal appreciation by Mr. F. H. Bramwell, Chief Engineer at General Chemicals Division and a personal friend of Mr. Humphrey, will be included in our next issue.

I.C.I.'s 'Terylene' Council

Dr. A. Caress, Ph.D., B.A., Joint Managing Director of Plastics Division, has been appointed chairman of the newly

formed 'Terylene' Council. In 1928 Dr. Caress joined I.C.I. and was responsible for much of the early research and development work on polymethyl methacrylate. When Plastics Division was formed in 1936 Dr. Caress became Research Director, then Technical Director. Dr. Caress was appointed a director of Dyestuffs Division last March. He has been a member of the Society of Chemistry and Industry since 1937.

As Chairman of the 'Terylene' Council Dr. Caress will assume responsibility to the I.C.I. Board for the entire 'Terylene' project. Although he will retain the title of Managing Director of Plastics Division, Dr. Caress will be solely concerned with the work of the Council, which will operate through the existing Divisional framework. This new organisation will co-ordinate research and development work in I.C.I. on all synthetic fibres, excluding nylon and 'Ardil.' The other full members of the Council will be Mr. G. F. Whitby (Deputy Chief Engineer, Wilton Works), Dr. R. Beeching (Technical Dept., Head Office), Dr. Rowland Hill (Dyestuffs Division), Dr. E. D. Kamm and Mr. W. F. Osborne (Plastics Division). The visiting members on the Council are Dr. F. J. Fiddle (Dyestuffs Division), Mr. A. Renfrew (Plastics Division), and Dr. D. Traill (Nobel Division).



HEAD OFFICE

Mr. W. S. Bristowe on American Tour

Mr. W. S. Bristowe, Head of Central Staff Department, was a member of a team composed of representatives of universities and industry which has just returned from a six weeks' visit to the United States of America under the auspices of the Anglo-American Council on Productivity. The team went to America to study the relationship between the universities and industry in that country, including the preparation and initiation of graduates with a suitable background for industrial employment, interchange of staff, and research facilities. The enquiry embraced not only scientists, engineers and other technologists, but men and women from all faculties at both the graduate and post-graduate level.

Included in the team were a Vice-Chancellor and three professors of United Kingdom universities, a secretary of a University Appointments Board, two principals of technical colleges, four representatives of industrial management, an official of the Ministry of Education, and a member of the T.U.C. Education Department.



ALKALI DIVISION

Mass Radiography at Winnington

Mass radiography equipment for the early detection of tuberculosis is now available in the Medical Department of the Alkali Division at Winnington. A skilled and experienced radiographer will operate the apparatus and a consulting radiologist, that is, a medical specialist in X-ray examinations, will be visiting Winnington regularly for the interpretation of photographs. Already 1200 members of the staff have filled in forms stating they wish to avail themselves of the scheme.

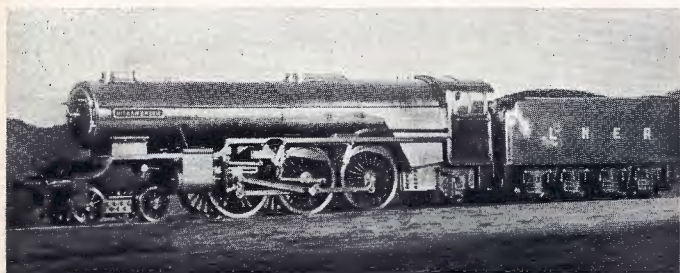
It is proposed to offer X-ray examination of the chest to all employees of the Alkali Division at Winnington, Wallerscote, Brine and Water, Construction and Lostock Works. Examinations will be voluntary and will take place during working hours. The results will be strictly confidential and will not be communicated to anyone else without the employee's permission and any communication after examination will be at the employee's private address. It is planned to examine twenty or thirty employees daily during four days a week, and it is hoped that there will be as nearly a 100 per cent. response as possible. A complete survey of all employees will occupy some fifteen to eighteen months, and it is intended to repeat the mass radiography regularly at about these intervals.

BILLINGHAM DIVISION

Fitter builds Model Locomotive

The handsome model locomotive in the photograph was built by Mr. Syd Plummer, a fitter in the Billingham Ammonia Works. It is a model of a Pacific express of the same class as the *Flying Scotsman*, is five feet long, weighs 120 lb., and took Mr. Plummer two years to build in his well-equipped workshop at his home in Roseberry Road, Norton.

Made to a scale of $\frac{3}{4}$ in. to 1 ft., every part had to be machined with the finest precision. With the exception of the valve gear, pressure gauge and the wheels and cylinder blocks, which had to be specially cast, every bit of the model was fabricated and tested in the workshop.

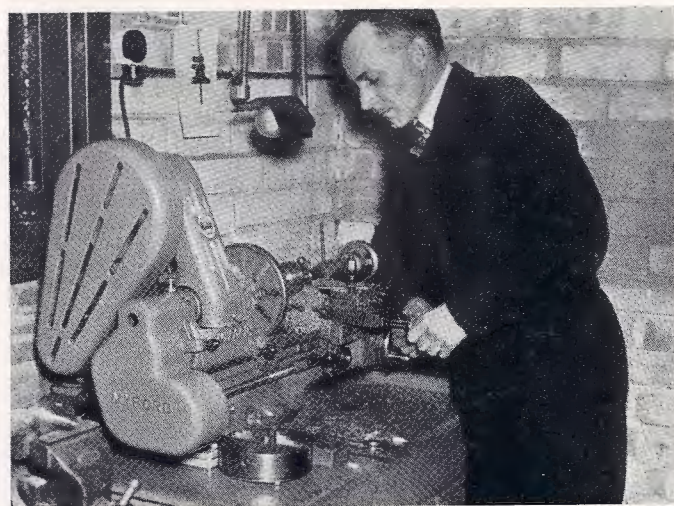


It took Syd Plummer 1500 hours to finish his model—a miniature, perfect in every detail, of the L.N.E.R. *Hielan Lassie*. It is a first-class piece of model engineering and a tribute to the skill and infinite patience of the man who built it. Like the real *Hielan Lassie*, it is coal-fired. It runs on a $3\frac{1}{2}$ in. track and is capable of hauling a load equal to ten adults. Overall cost of materials was about £25. The present-day market value of the model is over £200.

The building of a rail track large enough to run the *Hielan Lassie* was out of the question, so Syd Plummer made a test stand identical to the test stands in railway locomotive workshops. The driving wheels of the loco stand on rollers, which turn as the wheels turn. These rollers are geared to a flywheel

which creates a load much the same as the loco would have if it were hauling a train along a track.

Syd Plummer is always having people along to see the model at his home. Naturally they want to see it working, and as it takes some time to raise steam he has built and installed a compressed-air unit so that the engine can be operated by compressed air for demonstration purposes.



Mr. Syd Plummer at his lathe

Apart from showing it to anyone who wants to see it, Mr. Plummer has not much interest in his beautiful model loco now. He had all his fun in making it. In any case he has turned his attention to something else—a 4 ft. 6 in. household refrigerator which will cost him about £18 when it is finished and could not be bought in the shops for less than £120. And he has always got his special hobby—photography. The photograph of the locomotive was taken, developed and printed by Mr. Plummer. He used a Reflex Thornton-Pickard camera with front and side lighting from two 100-watt lamps. The final print is a composite and was made from three negatives—the foreground, the model, and the background.

DYESTUFFS DIVISION

Mr. G. E. Slack

George Edward Slack entered the service of Oliver Wilkins & Co. Ltd. (now known as the Derby Works of Dyestuffs Division) on 1st July, 1906, at the age of 17, as a coachman. Apart from four years in the Royal Artillery during World War I, he was in the Company's employ from the day he started until his well-earned retirement on 1st March, 1951.

In the Derby Recreation Club on 23rd February the works manager, Mr. H. K. Frew, presented Mr. Slack with a wireless set from his friends and colleagues throughout the works and recalled many of the changes which had taken place since the old coaching days. He paid high tribute to the quality of George's work, and to his conscientiousness and fair-mindedness. There was hardly an activity in the works with which George had not been connected at one time or another. Mr. Frew made special mention of the fact that Mr. Slack was the works first foreman, and that he represented Derby Works at the meeting in London called by Sir Alfred Mond (later the first Lord Melchett) to inaugurate the Works Council Scheme.

Mr. Slack has been connected with the works fire brigade; he has also worked for local hospitals, not only through the works committee but with the town's committee of other days.

As a young man he was an all-round sportsman, being an outstanding footballer and cricketer. George Slack, said Mr. Frew, "started playing cricket as a young man and has played cricket ever since."

Young I.C.I. International

James Billington, a 16-year-old laboratory assistant in the Colours Experimental Department at Huddersfield Works, was selected to play as goalkeeper for England in the Air Training Corps association football international match against Ireland on 24th March. England won by 10 goals to nil. He played again for England on 7th April in their match against Wales at Sunderland.

James Billington was educated at Heckmondwike Grammar School, where he joined the A.T.C. He is keenly interested in athletics and at the annual A.T.C. national sports was fourth in hurdling.

GENERAL CHEMICALS DIVISION

A Link with the Past

Pearl, the last barge-horse on the Bridgewater Canal and one of the few remaining ones in the country, hauls casks of I.C.I. acid from Runcorn to the wharf at the Castlefield distribution depot in the barge *Punch* and pulls the barge back to Runcorn with empties.

Aboard the barge live the Williams family—Mr. George Williams, his daughters Alice and Liza, and their dog Jimmy. Pearl has been tugging them along on the end of a rope on the ten-hour journey for two years. Mr. Williams has been in charge of horse-drawn barges up and down the country for the last twenty-five years and thinks it is a grand life.



The Williams family aboard their barge Punch

Eighty years ago there were 400 horse-drawn barges on the Bridgewater Canal. Fast barges changed horses every five miles. One of the most famous of the fast barges was an express, the *Duchess Countess*, which was known as the fly boat. This barge had knives at the prow which cut through the tow-ropes of slower craft if they failed to slacken at the approach of the *Duchess Countess*. It ended service on the Bridgewater Canal in 1920 and became a pleasure boat.

The 28-mile canal route from Manchester to Runcorn is the longest level stretch in the country without a single lock.

LEATHERCLOTH DIVISION

Mr. C. W. Franks

Mr. C. W. Franks, chairman of Leathercloth Division, retired on 30th April after completing more than 40 years' service with I.C.I. and its predecessors.

Mr. Franks began his career with the Company in 1910, when he joined the New Explosives Co. Ltd., which later became Nobel Chemical Finishes Ltd. His connection with the leathercloth industry dates from 1924, when he became secretary of the British Pluviusin Co. Ltd.; and when Nobel Industries Ltd. also acquired control of the British Leathercloth Manufacturing Co. Ltd. in 1925 he also became secretary of that company. On the formation of the Leathercloth Group he was appointed Group Secretary and a Group Director. He became general manager of the Group in 1931, managing director in 1932, and has been Division chairman since 1946.



Mr. C. W. Franks

During the last war he served on several Ministry of Supply committees concerned with the coating of fabrics for war purposes. He has therefore played a leading part in the substantial development of the Company's leathercloth interests over the past twenty-five years. Because of his interest in the human aspects of management he has been a familiar and popular figure with all employees during that period.

In his younger days Mr. Franks was a useful cricketer and tennis player, but during the past twenty years his main interest has been in golf and gardening. Although he is a man of Kent and still remains a southerner at heart, he has made a host of friends in the Cheshire area. Nevertheless Mr. Franks proposes to establish his future home in the south. He has no definite objectives in mind, but the maintenance of physical fitness will play a large part in his plans for the future.

Mr. Franks will be succeeded as Division chairman by Dr. A. E. Mitchell, who will be relinquishing his position as Division managing director which he has held for the past nine months.

METALS DIVISION

Boxing Champion

Albert Jones, amateur flyweight champion of Great Britain in 1950, was the guest of the Kynoch Social and Recreation Club on 12th March, when he was presented with a chiming clock by the chairman of the Kynoch Amateur Boxing Club Committee, Mr. T. G. Sanders.

Mr. Sanders recalled that Mr. Jones, who joined the Kynoch A.B.C. in 1947, carried off the Midland Counties flyweight championship in the 1948-9 season and the national championship in the following season, thereby bringing the national flyweight title to Birmingham for the first time in many years. At the end of the 1950 season he resigned from the Kynoch A.B.C., members of which were continuing to watch his boxing career with interest and pride.

Continental Tour

Miss Jean Underhill, of Organisations and Methods Department, Kynoch Works, has been selected to join a party of twenty-four girls leaving this country in April for a six weeks' tour of France, Switzerland and Germany.

The tour is sponsored by the South African Aid to Britain Fund, with the object of promoting friendly relations and better understanding between young people of neighbouring European countries.

Before departure the party will be received by Mrs. Attlee at No. 10 Downing Street.

NOBEL DIVISION

Shooting Successes

Ardeer miniature rifle teams gained notable successes during the winter season 1950-1 and acquired some handsome trophies. In Division 1 of the Ayrshire League Ardeer A team finished in second place. The Ardeer B team, however, topped Division 2 of the Ayrshire League and won the Marquis of Ailsa Trophy.

Four Ardeer teams shot regularly in the West of Scotland Leagues and at the end Ardeer A finished second in Division 2, Ardeer B team was fifth in ten teams in Division 3, and Ardeer C team, which had shot consistently well during the entire winter, was top in Division 8 with a point lead over rivals Insurance A, who were defeated by 383 points against 380 in the last decisive match. For this performance the team won the Imperial Shield. In Division 11 of the same leagues Ardeer D team ended in a middle position.

The I.C.I. Rifle League shoots were revived this winter and Ardeer took second place to Kynoch A in Division 1. Six teams were entered and each shot five matches. Ardeer lost one against the strong Kynoch team. Two Ardeer men were among the best averages in this league, J. S. Young being fifth with 99.2 and R. Findlay ninth with 98.2.

PLASTICS DIVISION

New Appointments

Mr. J. C. Swallow has been appointed Joint Managing Director of Plastics Division. Research Director of the Division since 1942, Mr. Swallow was before that Research Manager of Alkali Division, where he was in charge of research work leading to the discovery and manufacture of polythene. In January of this year he delivered the Cantor Lectures on the Plastics Industry at the Royal Society of Arts.

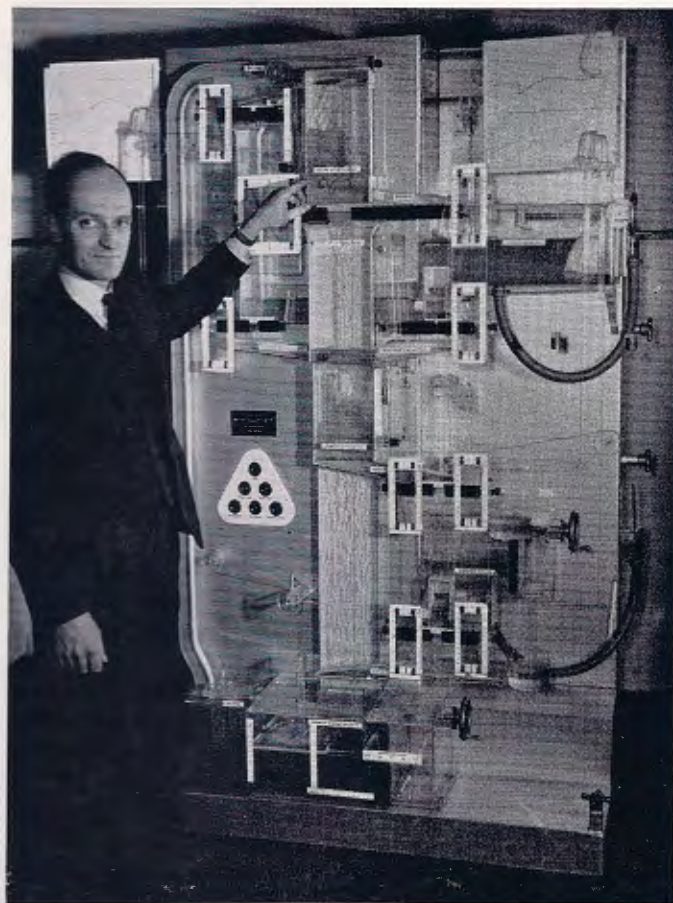
Mr. Swallow has been associated with I.C.I. since its formation. His successor as Research Director, Mr. E. G. Williams, who joined the organisation in 1934, has been with Plastics Division since 1943 and was previously deputy manager of Research Department.

New 'Luron' Angling Competition

Cash prizes totalling £500 will be awarded by the end of the year in the new 'Luron' Angling Competition, which opened on 1st April. Prizes will be awarded for the best fish caught each month, but the new competition is planned on a zonal basis, providing opportunities for anglers in all parts of the country. Copies of the rules, together with details of the fish eligible for each month of the competition, may be obtained from Plastics Division, Publicity Department.

Economics through 'Perspex'

The London School of Economics has recently installed an ingenious machine, constructed almost entirely from 'Perspex,' for demonstrating visually the mathematical aspects of economic theory. In a matter of minutes the machine works through and records on graphs changes in the national economy which would take a year or more to happen in reality.



Mr. A. W. Phillips, the designer, demonstrates his machine

It will, for instance, demonstrate complicated reactions such as the effect of depreciation on the national income, on taxes, on the rate of interest and on the balance of payments. The effect of devaluation on the volume of exports and imports can also be seen; in fact practically all the changes which occur in the national economy for almost every conceivable change in the variable factors which form a basic part of that economy can be shown.

The machine, which was designed by Mr. A. W. Phillips, an assistant lecturer at the London School of Economics, is proving invaluable for teaching economic theory, and several more are in course of construction. Some of these are to be exported to the United States for installation in American universities and others will go to universities in the British Isles.

I.C.I. (S.A.)

Mr. P. F. Pike

Our picture shows a scene from the party at Phylench Hall, Hillbrow, Johannesburg, when the staff of I.C.I. (S.A.) and their wives gathered to welcome Mr. P. F. Pike, their new general manager.



Mr. Pike, who was accompanied by Mrs. Pike (seated on his right) and his daughter Josephine, is replying to a speech of welcome by Mr. H. A. Treadwell, Secretary and Chief Accountant, I.C.I. (S.A.). He told the company that he had been in Johannesburg for only three days but that he envied people who had lived there all their lives.

THE REGIONS

Mr. W. B. Pitkethley

Mr. W. B. Pitkethley, Manchester Area Sales Manager, Metals Department, who has retired, narrowly missed a half-century with I.C.I. He had 47½ years' service.

Mr. Pitkethley is a very keen sportsman who only last year won the Manchester Area Office Sports Club snooker championship. He is to live in Liverpool, a town with which he has been in long association.

Regions Man plays for Ireland

Mr. George Nixon, who is employed at Duncrue Street Warehouse, Belfast, is going places in the soccer world. Playing at centre-half he assisted Ireland to defeat Scotland 1-0 in the Youth International on Saturday, 3rd March. He was also included in the Irish team which travelled to Cannes for the International Youth Tournament at Easter.

WILTON WORKS

Olefine Works Fire

Few people who were in the Wilton area on the evening of 5th March can have failed to see the fire which broke out on the Olefine Plant fractionation structure just before 5.30 p.m. and raged for nearly two hours before being brought under control.

The section of the plant involved was in the final stages of completion. The fire started on the structure, about 70 feet from the ground, making it a very difficult problem for the fire-fighters to deal with. It quickly spread along the pipes and vessels, which are lagged with cork, until an area about 80 feet wide, covering the top four decks of the structure, was involved. Damage was caused to a great deal of the lagging and much of the ancillary equipment such as instruments and electrical fittings, but the steel framework itself and the major fractionation towers and vessels were almost unaffected.

Although the damage caused was not so extensive as at first appeared probable, the rehabilitation of the plant is expected

to take several months. Every effort is being made to effect the repairs as quickly as possible, and to this end assistance has been offered from many parts of the Company, as well as from outside firms who have co-operated in building the plant.

Meantime, work on proving sections of the plant which were not damaged by the fire was restarted as soon as temporary repairs to the lighting had been made.

It was a great disappointment to everyone that such a disaster should occur when Olefine Works was nearly ready to start up, but matters might have been far worse had it not been for the courage and energy of all those who fought the fire and prevented it spreading to other parts of the plant.

DO YOU KNOW?—Answers

(See page 138)

- A (1) Brunner, Mond & Co. (Alkali Division). (2) Cassel Cyanide Company (General Chemicals Division). (3) Eley Brothers (Metals Division). (4) Curtis's and Harvey (Nobel Division).
- B Nene.
- C (1) Carboys for hydrochloric acid. (2) Cylinders for chlorine. (3) Drums for sodium silicate.
- D Plant Protection Ltd.
- E Billingham (Durham), Oldbury (Worcestershire), Runcorn (Cheshire), Smethwick (Staffordshire), Widnes (Lancashire), Wilton (Yorkshire).
- F (1) *Confessions of a China Hand*, by Ronald Farquharson. (2) *Both Sides of the Road*, by Sidney Rogerson. (3) *A History of the Chemical Industry in Widnes*, by Dr. D. W. F. Hardie.
- G Here are the sixteen: (1) Nobel House. (2) I.C. House. (3) Development. (4) Engineering Services (purchasing). (5) Stationery. (6) Stocks and Shares. (7) Hostel. (8) Alkali, Alfloc Water Treatment Service. (9) Silvertown. (10) Central Agricultural Control. (11) General Chemicals Heat Treatment Service. (12) Southern Region Sales. (13) Kentish Town Depot. (14) Metals Lead Shot Factory. (15) Sporting Ammunition Factory. (16) Wandsworth Works.

Correction

In the March issue in the article on I.C.I.A.N.Z., 1875 was incorrectly given as the date when explosives were first manufactured at Ardeer. This should have been 1873.

THE JUNE MAGAZINE

The new I.C.I. fibre 'Terylene' has certain remarkable characteristics which will undoubtedly make a big appeal to the public when it becomes available. It is extremely strong; it stands up to rough treatment at the laundry and even to boiling; and it retains its shape after washing, so that ironing is unnecessary and even pleats are not disturbed. Last but not least, moths and other insects leave it severely alone. These are some of the facts about 'Terylene' told by W. F. Osborne of Plastics Division in the main article in the June issue.

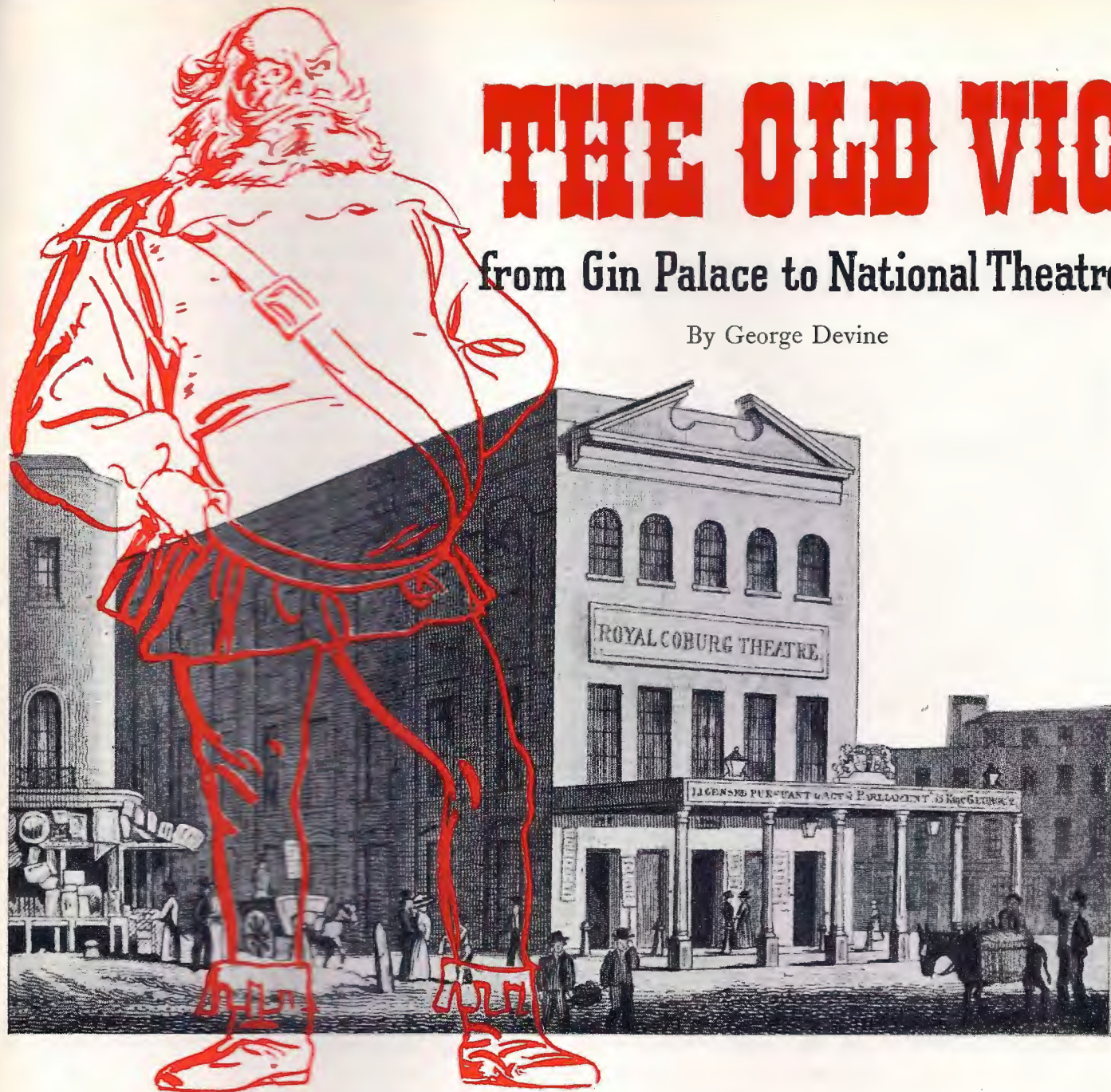
This feature is followed by personality sketches of the three post-war chairmen of workers' representatives at Central Works Council—C. Morris of Metals, T. McCall of Nobel and W. E. Brown of Dyestuffs. The drawings are by Bert Thomas.

The remainder of the *Magazine* is tuned to the holiday season. Alfred Baldwin contributes an amusing account of a week-end spent by him with some American friends at Delaware. Danny Reed, at one time an Alkali Division lorry driver and now a Polythene Plant operator at Wallerscote, writes on his favourite outdoor recreation of canoeing. And Elizabeth Marsh, who until recently was a typist in Nobel Division, gives a vivid account of climbing the Napes Needle in the Lake District.

THE OLD VIC

from Gin Palace to National Theatre

By George Devine



Ever since the days of Lilian Baylis the Old Vic has been a national institution beloved of Londoners—and indeed of the whole country. In July 1940 the theatre was bombed out of action. Ten years later, last November, it opened its doors again; and here George Devine, one of the Company's directors, tells of past memories and of future plans.

NEARLY everyone knows that the Old Vic is the name of a theatre in the Waterloo Road, London. Almost as many people know that the Old Vic is to provide the artistic foundations for our National Theatre. But very few are aware that this now august building was once condemned as a disreputable gin palace and forced by the authorities to close its doors!

The theatre itself was first opened in 1818, and although it was situated in such a dangerous part of the town that guards were provided to escort intrepid playgoers across the river to its doors, many a famous actor of the period appeared on its stage. Its career was notably successful in these early years,

but by the middle of the last century it had become a music hall of the lowest type.

Its patrons hardly visited it to see what was being performed, but rather to see what performances they could give themselves in the bars at the back of the auditorium. Gin was cheap, and the "Royal Coburg," as it was then known, was the cheeriest place in the neighbourhood to get it. The heavy hands of the law finally tore up its licence, not only to sell drink but to give performances.

The theatre remained dark, silent and dirty for ten years until a Victorian lady who was interested in providing good and healthy pastimes for the working classes of Lambeth



PREPARING A MODEL SET for the Ben Jonson's Bartholomew Fair

obtained a new licence to open its doors once more. Miss Emma Cons offered her patrons coffee, lectures and concerts. Her audiences at first were thin, but she persisted and finally gave the management of the building to her niece from South Africa, Miss Lilian Baylis. The story of how that great woman created the Old Vic and Sadler's Wells from nothing has often been told in many books.

The Old Vic has been closed for ten years once again. This time it was not a punishment for bad behaviour, but the penalty for being in one of the busiest parts of London and near a railway station. In July 1940 the Old Vic went out of commission as a building, although its name never died. In November 1950 it once more opened its doors and welcomed a new generation of theatregoers with *Twelfth Night*.

Meanwhile its officers and its artists have not been idle. The name of the Old Vic today is famous not only all over Britain but in many parts of the globe. "Old Vic" no longer stands just for a building or a company of actors: it stands for the most comprehensive theatre organisation that this country has ever known. It is for its national activity that it can lay claim to being the basis of a future national theatre.

Its main branches are (1) the Old Vic Theatre, (2) the Old Vic Company, (3) the Young Vic, (4) Bristol Old Vic Company and (5) the Old Vic School. It may be interesting to take these elements in turn and see what they do and what they stand for.

The Old Vic Theatre, as we have already indicated, has a long and varied history. In the period 1925-1950 it was the cradle of all the finest actors and actresses on our stage today, from Dame Sybil Thorndyke to Alec Guinness. There is not a well-known actor or actress in the classical field who has not trod the boards of the Old Vic.

This is a claim that no other theatre can make. It has never been a smart or "snob" theatre, but a popular house playing

at popular prices to an audience which must have resembled the nearest that could be found to the Elizabethan audience. It did not confine its policy to Shakespeare, nor indeed to English classics. Its policy was good acting in good plays. Its large gallery of nearly four hundred seats was sold at sixpence a seat right up to the last war, and its very existence was always a marvel to foreign experts coming to this country.

Now that it is reopened, will it be able to keep this reputation? Time alone will show, but the Governors intend that it will. The prices have had to go up, but there will still be the gallery to be visited for 1s. 6d., and the top price in the stalls will still be a third less than West End prices. Improvements have been made in the layout of the theatre to improve the view of the stage, and by projecting a platform into the auditorium with entrances at each side, the stage will be the most up to date in England as far as theatrical architecture is concerned. The installation of an electronic valve controlled switchboard will also place it in the forefront of theatre-lighting installations. Although it is not officially part of the Festival of Britain Exhibition, its proximity to the Exhibition site and the advanced nature of its artistic equipment should make it one of the most interesting attractions for visitors to London.

This theatre will be the home of the Old Vic Company and all its attendant workshops. A company of the size and policy of the Old Vic requires a large number of services around it, and everything which appears on the stage is made within the organisation except for the wigs. The Old Vic Company is not, in fact, a permanent company in the sense that the same artists are engaged each season, but there is a nucleus of actors and actresses who usually spend three or four seasons with the company and thus pass on a certain tradition. Thus the company's ability to act together as a team, which is one of its special features, is maintained by a system consciously employed by its directorate.

The fame of the acting of the Old Vic was really brought to its peak by Sir Laurence Olivier and Sir Ralph Richardson in the years at the end of the war. Between the two world wars German acting and production held the palm in Europe, but through the activities of the Old Vic, its foreign tours and its fine work at home, the European theatre now looks to England as the leader in the art of acting.

Nor does this company confine its activities to London or



ALL NIGHT QUEUES waiting for the Old Vic to open its doors once again

extensive tours of the Empire and foreign lands; it has always been part of its policy to tour in Great Britain also, thus carrying out the principle that London should not be the only privileged city as far as the art of the theatre is concerned. Touring a company of this size is necessarily an expensive and difficult business, but the grants from the Arts Council of Great Britain are partly given to enable such tours to be undertaken. Although its base is in London, the Old Vic Company belongs to the whole of the country, and will pay visits as often as it can.

One of the most interesting features of Old Vic policy is the system of playing in repertory. This means that the plays are alternated, so that at least two and sometimes three plays may be presented in one week. This enables the visitor to see the same company in different types of plays. It is a system which has been in use in opera and ballet for a long time, but it is comparatively new in straight theatre. It is an expensive system, because of the cost of changing round the scenery, lighting, etc., but it has proved itself so interesting for the public that it is now firmly established at Stratford as well as the Old Vic. This season each play will be given a short run of four weeks to get it properly "run in," and then in the spring, when the visitors arrive, the repertory season will start.

The Bristol Old Vic is an example of a provincial theatre centre run by local bodies with administrative and artistic links with London. The Arts Council owns the theatre and takes a part in its management, but the Old Vic has had a hand in its artistic running since 1946, when Hugh Hunt was the Director. Mainly as a result of his efforts before he came to be the Director of the Old Vic Company, the Bristol Old Vic now has a solid reputation in the West Country and runs a dramatic school and patrons' club of its own. It is a typical and ideal instance of decentralisation, which the existence of the Arts Council has made possible. The Director of the Bristol Old Vic is responsible to a management committee presided over by Sir Philip Morris, the Chancellor of the University of Bristol. The citizens of the town feel that the theatre is a Bristol affair and not something which really owes its allegiance to London. At the same time there are links with the London Old Vic, both artistic and administrative. Are not such provincial centres an essential part of the framework of a future national theatre?

The Young Vic is yet another type of link with the country. Here is an organisation, also based on the Old Vic and its London workshops, whose main activity is touring. It consists of one, and on occasions two, companies which tour for forty weeks in the year, taking classical works to theatres and halls all over Great Britain. It makes a special appeal to the younger theatregoer in its choice of plays, but its productions have proved equally attractive to audiences of all ages.



THE KING AND QUEEN at the opening night of the Old Vic's first post-war play, *Twelfth Night*

Last season the Young Vic companies played in over a hundred towns, large and small, and covered over 15,000 miles. Since its inception in 1946 the Young Vic must have introduced thousands of youngsters to the theatre for the first time.

The Old Vic School is not "just another dramatic school," sending out hopeful young artists into an already overcrowded profession. It is a small school with a limited intake which aims at training young actors and artists of the theatre in the most advanced outlook and methods of today. Its students naturally have the advantage of being closely connected with a working theatre organisation, although the companies are by no means exclusively recruited from the Old Vic school. It is the only theatre school in the country which makes a speciality of separate courses for technicians, stage managers and designers; proper training in this aspect of theatre has been badly lacking in the past, and it seems right that the Old Vic organisation, with its varying types of enterprise, should undertake the provision of the producers and designers of tomorrow.

The theatre is an art, and any theatre run by artists is bound to be the expression of a point of view. It cannot be an institution catering for every point of view. It is essential that the Old Vic should not become an institution of the dead sort—a kind of government department with no real artistic purpose. On the other hand, by the variety of its activities, by keeping in active touch with the country and the world, by maintaining always a fresh outlook, the Old Vic should be able to keep in the forefront of the best and most up to date in all aspects of theatre practice.



The old town, Annecy

Photo by P. G. L. Gillieaux (I.C.I. Belgium)